DOCKET SECTION

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

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POSTAL RATE AND FEE CHANGES, 1997 DOCKET NO. R97-1

FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION
NOTICE OF ERRATA TO DIRECT TESTIMONY OF LEONARD MEREWITZ
FGFSA-T-1

The testimony of Leonard Merewitz, FGFSA-T-1, contains many errors which require correction. A detailed listing of the changes are set forth in the attached Errata summary. Since there are so many pages requiring revision, the entire testimony, including Exhibits, has been prepared to reflect the Errata and is attached hereto.

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FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

ERRATA TO

DIRECT TESTIMONY OF LEONARD MEREWITZ, FGFSA-T-1

Page	Line	
2	10	price-waterhouse - change to - Price Waterhouse
3	9	In purchased transportation - change to - of InterBMC and IntraBMC purchased transportation
3	10	"We include all modes ... InterBMC higheay transportation." Delete entirely.
3	12	Inter B - change to - InterBMC
4	5	to CFM of capacity - change to - to cubic foot miles(CFM) of capacity
5	1	Exhibit LAM-5 - change to Exhibit LAM-6
5	11	Last incomplete sentence, correct to read as follows: When those pieces are converted to pounds, the decrease goes to 12.8% as shown in the final column of the first panel.
5	12	Standard (B)(p.2) - change to read - Standard (B)
6	14	Parameter. - change to read - parameter b.
6	12	quantity (1 + r) - change to - quantity (1 + b)
6	16	change "less" to "greater"
6	17	change 13.1 to 16.0
6	18	change 13.7 to 10.8
7	4	change 1990 to 1991
7	7	10.4% of this increase - change to - 13.1% of this
8	8	proceeding. R77-1 - change to - proceeding, R77-1

9	3	econometrician" tools - change to - econometrician"s tools
9	6	H-82,84 - change to H-82 and H-84
9	6	use it despite - change to - use these data despite
9	17	response - change to - responds
10	5	volume increases real - change to - volume increases 100% real
10	fn5	change to read: Really the "rate relevant" run of about three years.
11	3	24 cents - change to - 31.5 cents
11	21	ever now - change to - every now
11	21	case - change to - cases
13	12	after LaLonde, insert: (see below, p. 22)
14	5	discussed - change to - discuss
14	14	after transportation, add: starting at p. 21.
14	15	on outbound and inbound - change to - on both outbound and inbound trips
15	2	delete reference to 9b
15	4	change to: In-bound SCF
15	5	change to: In-bound other
15	7	change to: out-bound SCF
15	8	change to: Out-bound other
15	9-10	change to: Outbound and inbound runs are compared in LAM-9a. Parcel Post is 33.9% of the CFM in quarter 1 for inbound runs but is only 23.9% for outbound runs.
15	13	characteristic of minimum variance". - change to read - characteristics of minimum variance.
18	25	When asked if mail to be mail to be - change to - When Prof. Panzar was asked if mail to be

18 26 house. Did - change to - house, did

19 1 mean - change to means

21 17 ... in all of them .5. - delete the 5.
22 18 delete the . and This

23 9 LAM-1 - change to - LAM-11

23 16 indices - change to - indications

24 1 1.112 - change to -1.08

24 2 (y96812) - change to - LAM-13 (See, Lib Ref FGFSA-H-2)

24 2 delete: (also see LAM-4a, p. 1 of 6)

24 5 insert "of" between make and a.
change "the following" to "these contradictory"

24 18 outbound leg - change to - inbound leg

25 10 because of the finding DBMC mail on - change to -
because (among other things) of finding DBMC parcel post on

25 12 estimates of PP cubic feet - change to - estimates of the relation between parcel post and Standard A cubic feet.

26 16 delete - "try to"

26 19 change "topology" to "typology" - 2 places

27 4 caste - change to - cast

27 15 delete the "for" in available for

27 22 Change first sentence to read: Why did PW and PS collect in-bound samples more frequently?

28 6 are - change to - or

28 7 delete "or"

28 11 that sample - change to - that the sample

29 7 BOUND Variables).our - change to BOUND Variable). Our

29 8 LAM-4a, 4b 5 - change to - LAM-3

LAM-3 Complete revision - original erroneously included combined inbound and outbound. Revision correctly reflects only outbound.

LAM-4b Revision to clarify and correct source references.

Lam-13 New, as correction to testimony (page 24) reference to (y96812)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all parties of record in this proceeding on this date in accordance with Section 12 of the Rules of Practice and Procedure.

Dated : January 26, 1998

M. W. Wells, Jr., Attorney

FGFSA-T-1

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

POSTAL RATE AND FEE CHANGES, 1997 DOCKET NO. R97-1

FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

TESTIMONY
OF
LEONARD MEREWITZ
(Revised per errata)

In Behalf Of
FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

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January 26, 1998

I. Qualifications

My name is Leonard Merewitz. I am a Principal in LAMA Consulting and have testified before this commission four times before: in R80-1, and R84-1, on behalf of USPS and direct and rebuttal testimony for the National Association of Presort Mailers in MC95-1. In this testimony the Florida Gift Fruit Shippers Association asked me to do studies on purchased transportation and its distribution over classes and subclasses of mail.

My education in economics was at Harvard College where I received a Bachelor of Arts degree magna cum laude in 1964 and at University of California at Berkeley where I received the Ph.D. in 1969. I began teaching as an Acting Assistant Professor at the same University in 1968 and remained as assistant professor at what is now the Haas School of Business Administration at Berkeley. I taught quantitative methods and transportation there until 1975 when I moved to the Motor Vehicle Manufacturers Association of the US (Now American Automobile Manufacturers Association) in Detroit. There I did research on autos and trucks and their regulation. In 1976, I moved to become Director of Transportation Studies at J. W. Wilson Associates in Washington. I joined the federal government in 1977 as a Senior Economist at the National Transportation Policy Study Commission, a temporary agency composed of Congressmen, Senators and members of the public who hired a staff to do studies and write a Report.

In 1979 the Postal Service hired me as Special Assistant to the Senior Assistant Postmaster General-Finance I remained at the PS as a member of Postal Career Executive Service from 1979 until 1986. At that time I joined the PRC as Special Assistant to Commission Crutcher and Staff Assistant. In late 1993, I left the US government's employ and I started LAMA Consulting in 1995. Between 1994 and 1996 I had affiliations with Jack Faucett Associates, Symbiotic Technologies and

Whitfield Russell Associates and participated in a trucking privatization project in Ukraine in 1994. I have published three books and about 17 articles in referreed journals or books including two in a series on postal matters edited by Professors Crew and Kleindorfer and published by Kluwer Academic Publishers in 1993 and 1997. I have been a member of the Transportation Research Forum since 1970. In addition to postal testimony, I have entered expert witness testimony before the South Dakota, North Dakota, and Montana Public Utility Commissions and the Superior Court of Alameda County, California. I am a member of Phi Beta Kappa, the Transportation Research Forum, the American Economics Association and the National Economists Club.

The purpose of my testimony is to review the work of Bradley USPS T-13 on attribution of purchased highway transportation costs. I then review the TRACS system of Price Waterhouse sponsored by witness Nieto USPS T-16. I evaluate methods of allocating attributable costs and suggest one of my own. I then review some of the special economics relating to transportation. These principles help us articulate criteria for judging cost allocation methods. From the errors of theory and data we find in TRACS. We find that we are unable to derive a distribution key for highway purchased transportation. In course of making these points we voice some opinions on the methods of TRACS, unfortunately many negative..

II. What Purchased Transportation Do We Study?

The Florida Gift Fruit Shippers Association asked me to study purchased transportation over the period 1988 to 1996, concentrating on highway transportation and the TRACS system.

A. The PS purchased some $3,730 million worth of transportation in FY 1996. Air, rail and water accounted for $1,538 million. Highway in total was almost exactly half the purchased transport budget at $1,540 million. Of this $1540 million, IntraBMC was about $260 and InterBMC was about $230 million. Source: Comprehensive Statement on Postal Operations p.20 (1996).

We have provided an Exhibit on recent history of Inter and Intra BMC purchased transportation. That is Exhib LAM-1.

Since parcel post is nonpreferential mail, and part of Standard (B) it uses (when Inter BMC and in certain other circumstances) the nonpreferential transportation system which uses the BMC's as hubs. It is collected from Associate Offices (AO's) to the extent it is entered there and then shipped to the rest of the country by InterBMC transportation. From there it is distributed to SCF's and AO's in their distribution area.

B. Bradley's regression analysis.

Professor Bradley describes an elaborate model. Much in it is correct and much is clever. A "scrub"is a logical term for data editing. Unfortunately the theoretical basis of the model is weak. He would not disagree that measurement without theory is a poor methodology. His main independent variable appears to be output but in the final analysis what he has measured is capacity and not volume. There is a close fit of cost to cubic foot-miles CFM of capacity. There is no showing of a close fit to volume variations, a necessary condition to infer "variability" or attribution. Attributable costs are those costs demonstrably related to volume. see Lib. Ref. H-1.

Prof. Bradley has foisted on this Commission a very clever little trick. He correlates container capacity required and container cost. That is a theoretical relationship. His good fits are deceptive. That is like a correlation between plant size and expected output. Industrial cost analysis focuses on cost per actual unit of eventuated output. Actual output is a random variable and as such is stochastic. High costs may eventuate from bad planning. In Bradley's model bad planning can never show. He never discusses actual output, discussing instead ceiling output whether he mentions it up-front or not. The history of capacity utilization as recounted in my Exhibit LAM-10 shows that capacity is a poor measure of true output or throughput. Effective management in transportation is not achieved by simply contracting for capacity. Developing good load factors is the key to that business as it is in the airline business which is well-known to consumers. Entrepreneurs go to great lengths to favorably affect their load factors.

Exhibit LAM-6 through LAM-8 show the impact of drop-ship rules new in 1991 and rates in third-class and Standard (A) on the traffic in the two accounts of purchased transportation which we study. Basically, the conclusion is that traffic is down while expenditures on transportation are up. Traffic is down because mailers, especially Standard (A) mailers are taking advantage of work sharing opportunities and doing more of their own transportation.

The top panel of LAM-6 is a summary showing a 12.8 percent drop in Standard (A) traffic between 1991 and 1996 and a 24% increase in Standard (B) traffic. Since Standard (A) is a bigger class in volume -- 13% of the larger group is greater than 24% of Standard (B).

Panel 2 concerns Standard (A) and shows that mail subject to nationwide entry or BMC entry[1] was 41.9 billion in 1991 and is only 33.1 billion in 1996. The change in workload measured by pieces in a -21 percent. When those pieces are converted to pounds the decrease goes to 12.8 percent as shown in the final column of the first panel.

Panel 3 (p. 2) concerns Standard (B). Here we have largely natural growth taking place with one exception. There has been considerable work sharing proceeding apace in the rate category of Destination-BMC parcel post. This phenomenon substitutes for Inter BMC transportation but not for Intra BMC. Destination BMC parcels still require transportation to their destination SCF's and AO's. Our solution is to claim one half the saved pounds as a workload saving since these two

[1]This mail is "mail not drop-shipped beyond [i.e. deeper into the system than] the BMC."

accounts (intra BMC and inter BMC) are roughly equal in magnitude. Line 8 shows the full savings and line 9 accounts for half the savings. The result when both Standard (A) and Standard (B) are brought together is a 2.7 percent decrease in traffic.

We may now compare this small decrease in traffic to an apparent healthy increase in transportation expenditures and explore the meaning of those changes. First we must obtain an estimate of real increase in the use of transportation services. Expenditures alone will not tell the full story because they include the results of price change, usually increases. When we have taken out those price increases, we will have the real increase in transportation services purchased.

From LAM-7 and LAM-8 we may infer that price change in the over-the-road trucking sector was no greater than 2.5 per cent per year (in fact the current estimate is 2.25 per cent per year) over the period 1991 to 1996. The exhibits show the price index for trucking nonlocal between June 1992 and November 1997. Exhibit LAM-8 performs a regression analysis on the model

$$\ln Y = A + b * t$$

Where ln is natural logarithm and t is time in months. Time differentiation shows that the rate of growth is the parameter b. The b we estimate is a monthly rate of growth. The quantity (1+b) raised to the power 12 gives the annual rate of growth which is here estimated to be 2.25 per cent. Since I do not have the complete series I need for my analysis I have to say that price growth was no greater than 2.5 per cent per year. Therefore in the period of our comparison price increase was 16.0

per cent while contract expenditures increased 26.8 per cent. The result was a 10.8 per cent increase in real purchased highway transportation services. One can say this was real in the sense of cubic foot-miles abstracting from price level change.

Thus, between 1991 and 1996 volume in the nonpreferential highway transportation system declined from 7181 million pounds to 6989 or by some 3% mainly because of drop shipping. Please see LAM-6. During the same period, purchased highway transportation increased 27 %. Not more than 13.1% of this increase was price increase because the price index, "Trucking excluding local" shows a 2.25 per cent average rate of growth in truck rental costs over that period). So, during this period there was a 16% real increase in the purchase of highway transportation services by the postal service. To summarize, we have a 16 % real increase in the face of a 3 % decrease in volume demanding transportation.[2] What should we

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[2]Even though this is the non-pref transportation system, designed for third-class and fourth-class (with the preferential designed for first-class and second-class) periodicals are seen in the traffic. One might object that traffic was increased over the period from the second-class or periodicals direction. But, the volume, by which I mean cube and not pieces (of periodicals has not changed over this time period). In millions of cubic feet, it was 242 in 1991 and only 240 in 1996.

Zoning

Zoning has existed in periodicals for a long time and this is analogous to dropship discounts. There is a premium for delivering mail and depositing it into the system closer to the destination. There is simply less traffic on those trucks and yet the amount of purchased transportation services is up about 15.8% in real terms. Volume (whether cube or pieces) alone does not drive the amount of purchased transportation input.

make of this? It certainly seems that the volume growth and spending growth are inversely correlated. As one goes down the other goes up. We do not seriously conclude this but the simplistic pari passu increase in purchased transportation as volume increases of Bradley's T-13 testimony is surely brought into question. It also appears that transportation is related to service standard needs as well as to volumes. Schedules are made to meet service standards. Trucks are consistently between 50% and 30% empty. Volume alone does not drive capacity; the need to meet schedules and serve volume drives capacity. Dr. Bradley has not taken into account service standards at all in any of his analysis: what has been called Service Related Costs in an earlier PRC proceeding, R77-1.

Mr. Bradley has told us that actual volume would be preferable to capacity.

As he wrote in an article in 1988:

> In purchased transportation, the "output" is the transportation of mail and the appropriate variable should include both distance and weight (or cube). In purchased air transportation, payment is made on the basis of actual shipments, so data is available for the actual pound-miles of mail transportation. In purchased highway and rail transportation, however, data is not available on the actual level of volume, because contracts are specified and payments are made on the basis of capacity. Therefore, a proxy for actual volume is required and the proxy that was used was cubic foot-miles of capacity.[3]

Capacity is just a proxy . The TRACS sampling process actually yields volume data for proper econometric analysis to find the impact of additional pieces on purchased transportation costs without

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[3]Michael D. Bradley and Alan Robinson, *Determining the Marginal Cost of Purchased Transportation*, Journal of the Transportation Research Forum, p.172

the dubious intervention of the relationship between capacity and volume. The relationship between capacity and volume may not be that simple.

Bradley very neatly and very intensely studied the wrong subject. He has done an engineering cost analysis with the econometrician's tools. We need an economic or econometric cost analysis with real world data. He ought to be very pleased to know that the data now exist to do his analysis. Bradley had available to him through TRACS real actualized volume from actual truck runs with live mail. These are available in L.R. H-82 and 84. He failed to use these data despite the fact that he said in his own writings that real volumes were preferable to a proxy for volume. Unfortunately Bradley must be rejected as a well-executed, poorly conceived project. He has made precise estimates of parameters which unfortunately have little relevance to regulation. Mr. Bradley has told us that actual volume would be preferable to capacity. Capacity is just a proxy . The TRACS sampling process actually yields volume data[4] for proper investigation and to find the impact of additional pieces on purchased transportation cost without the dubious interconnection of the relationship between capacity and volume. The relationship between capacity and volume may not be simple.

This analysis flies in the face of the obvious facts. One of the most successful work sharing programs is in transportation. Mailers are availing themselves of it in droves. So effective volume (for transportation purposes) is going down. PS responds by purchasing more transportation. Six years is a long time. This is long enough to make adjustments in the transportation system. Several of the major changes of drop shipping should have had their

[4]Including weight and mailcode or subclass.

impact by now.

As shown in LAM-9b the average use of capacity on Intra BMC is 56.7% and declining. On Inter BMC (longer-haul) it is 69%. Spending on these two accounts has increased 49% in the last six years. Real spending has increased and capacity utilization is going down. After all the t-statistics and R-squared are discussed what is the policy prescription of Bradley's analysis? It is that in the long run[5] as volume increases 100% real purchased transportation will increase 97%. Well, transportation needs have gone down and transportation expenditures have increased, nevertheless.

Bradley would have us believe that he studied cost drivers and that TRACS will provide the missing link to relate transportation cost to volume. He believes that he has studied the change in cost with respect to the change in capacity and the TRACS will provide the answer on change in capacity with respect to change in volume. He is wrong. TRACS has nothing to do with capacity or changes over time. TRACS looks at one point in time to distribute costs. Bradley's analysis, therefore, fails because of the missing link. Professor Bradley surely knows that misspecification is one of the most serious problem in econometrics. Not getting correct variables in an analysis. Unfortunately he has fallen in to a classic trap in social science. Wisely, he divides the problem he must solve into several parts. Unfortunately he cannot or does not know how to study the important or difficult part,

[5] Really the "rate-relevant" run of about three years.

while he can flex his methodological muscles on the part that is less important, almost trivial. Transportation is pervasive throughout our economy. It is provided by households and by producers both owner operators and firms. The nature of its costs are very well known. The government uses standard costs on income tax returns 31.5 cents per mile is the allowable cost on transportation. That is an average which can be used nation wide without much error. Similarly, the cost of operating trucks is well known. If Bradley could study the change in transportation cost with respect to his cost driver that would be fine if it were supplemented with good relationship between changing capacity and change in volume. No one has done proper econometric specification of this second relationship. Surely it must consider factors other than volumes so that the net effect of volume can be seen with more preferential mail on in theses accounts service standard is surely influenced. With persistent over capacity the relationship of capacity to changes in volume is variable. With all due respect, professor Bradley is somewhat like the inebriate who has lost his keys. He can't see in the dark (where they probably lie). So he looks under the street lamp where the light is good with such over capacity and with the growth of preferential and nonpreferential transportation runs. Factors other than volume must be in the transportation cost equation.

III. TRACS

A. Description

Although TRACS, a measurement system designed by Price-Waterhouse (PW), for the USPS, has been in use in rate cases since R 90-1 it has never been tested or examined or evaluated on the record. Information about it has come from the PS at a slow pace: a few library

references every now and then in mail classification cases and a few now and then in a rate case. It is a measurement system to measure utilization of transportation resources for air, rail, highway, and water. It is not a statistical system, but it does involve sampling and has statistical properties which can be measured. PW designed forms to be filled out in a CODES environment with hand-held equipment by PW and postal technicians.

In addition to statistical accuracy, issues of not slowing down the mail were in the minds of the designers of TRACS. In the highway sampling system, a truck is never stopped on the road for sampling. Instead, sampling is done only when mail is unloaded from trucks. At that time, mail waits to be processed so there is time for sampling without unduly slowing the mail. Nevertheless, the estimates have statistical properties whether or not they were designed as a statistical system. Despite the heaviness of traffic on the outbound movement, 70% of sampling was done on inbound movements, and only 30% on the outbound.[6] The inbound movement is sampled more heavily for the convenience of the postal service. This is certainly not a sampling scheme designed to minimize the variance of estimators and witness Nieto says as much (see Tr. 7/3434).

B. Expansion

Ms. Nieto uses the word "expansion" to means several things. The TRACS system in seeking to be able to find costs of each leg of the trip expands volume off-loaded many times. It expands what is in items or containers to the size of the container. That space is expanded to the size of the vehicle and later the off-loaded material is expanded for the emptiness of the vehicle on previous legs of its journey. One might almost say that TRACS' designers were obsessed with expanding.

I wish to separate these because some I accept in my analysis and some I cannot accept.

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[6] These are detained with respect to the BMC for all intra BMC and inter BMC's.

**Some of the methods used by P-W and described by witness Nieto are haphazard methods. Discussion surrounding the variable PERCONT were loosely described and applied by statistical technicians. Some technicians recorded pieces, others weight or percentages of the truck or of the container or item. Nieto attempts to paper over these problems by saying it will all come out in the wash (FGFSA/USPS, T 2-49).

2. To expand from a "sampling" to a universe or population I accept as standard sampling and extrapolation to a population.

3. To expand for empty space. I cannot accept. This is to charge the "items" for only that traffic presently in the items. It is also to charge the vehicle-trip for only those items presently in the vehicle. The key problem with this approach is the concentration on the leg of the trip as the proper unit of cost analysis of the trip segment from point A to point B and not the round trip from A to B and back to A. Professors Bowersox, Smykay and LaLonde (see below, p. 22) record the accepted analysis unit as the round trip in the freight transportation literature.

I am informed that the PS never stacks freight higher than 6 feet. UPS, on the other hand uses a "double bottom" so that space can be used up to the full 10 feet of the trailer. It is ludicrous to expand to the full cubic foot capacity of the truck when trucks are very rarely if ever used above the six foot high point.

Ms Nieto frequently protests that no costs are calculated in her analysis (Tr. 7/3433). She says she does not cost one leg at a time. This is technically true because she does no costing per se, but it is the simplest of steps from a distribution key to a list of costs. The main contribution of TRACS to purchased transportation cost finding is the development of a distribution key. Nevertheless, how a sample is treated is very important in developing a distribution key. If

proportions of mail codes or subclasses are derived from a calculation, then the calculation in a very real sense is determining the Distribution Key which will then be applied to the attributable amounts.

Expanding for empty space is very akin to blaming the victim. The carpool results we discuss in the next section work out much more equitable with more reason when the unit over which the spreading of costs is done is larger than the leg. Some traffic happens to be on sparse runs. These are often incoming and therefore in a peak-load analysis would be charged a lower unit cost. We explore that possibility but are not advocating that. Please see LAM-3 . They are charged in the Postal Service method for the leg. Because there is sparse traffic on the leg, they pay high unit costs. That is the key problem: costing the leg. One may advocate costing the round trip or costing general transportation in a multi causation framework which we call "jointly determined". In our car pool example, the one driver is on some analysis asked to pay for the full cost of the drive home from school. Since the other riders need the car at home in the morning, I do not believe that is fair. The trip to and from is a unit. Please see our discussion of the special economics of transportation starting at p.21. There is no point in expanding to the size of the truck. Let us charge each CFM on both outbound and inbound the same unit cost. Charge each student in the carpool for trips he takes. The students take three man-trips in the morning and only one man trip to return the vehicle because the other students have different schedules and get home on their own. Let us assume that the cost of a round trip is $8.00. Then Table A applies. Expansion is needed when the purpose is to find the cost of the leg *per se*. When costs and CFM are aggregated and then a quotient is formed, the aggregation serves the function of the expansion: applying the sampled proportions to the whole. The crucial item is the unit of aggregation.

There are decided differences between the class composition of the traffic on in-bound and out-bound trips to and from the BMC. See LAM 9a analysis of this can be facilitated by observing facility categories (FACCAT's) where tests are taken. These come in the following five types :

Inbound SCF

Inbound other

BMC

Outbound SCF

Outbound other

Outbound and inbound runs are shown in LAM-9a. Parcel Post is 33.9% of the CFM in quarter 1 for inbound runs but is only 23.9% for outbound runs.

TRACS was executed more with the convenience of PS in mind and less with statistical accuracy in mind. Ms. Nieto said several times that her estimates did not partake of desirable statistical characteristic of minimum variance".

C. Examples

Most regulatory problems involving joint or common costs can be boiled down to the question of how to split the costs of a group lunch. Four people go out to lunch. Do they split the bill four ways or do they split the bar bill separately?

A simple example may show the issues in a more familiar context. Here is an example which shows that expansion to the size of the truck is wrong, that calculating costs for each leg of a trip is

erroneous.[7] Let us envision a carpool. Three students carpool to a school. All three users, the driver and two riders, use the carpool in the morning. In the afternoon, since class schedules differ, only the driver returns home in the carpool. They rotate using each other's cars but the same student with the late classes takes the car back to the bedroom community each night. The question is how should the $8.00 round-trip cost of the carpool ($4.00 on each leg) be apportioned among the three users. In Scheme A, as shown in Table A below, every man-trip costs $2.00, since there are a total of four man-trips each day. The drive in the morning generates $6.00 and the drive home generates $2.00 in revenue. Scheme B charges the driver more when he is alone coming home. This ensures that the round trip is the unit of analysis, and no effort is spent trying to allocate the cost of each leg.

Table A

Equal Cost Per Person Per Man-Trip First Pricing Scheme

Student	Uses	Total Number Of Man-trips	Charge Per Man-trip	Student Charges
A	Morn & Afternoon	2	$2.00	$4.00
B	Morning	1	$2.00	$2.00
C	Morning	1	$2.00	$2.00
Total:				$8.00

[7]The way each leg is costed individually is through "expansion." Proportions are measured and then the entire car cost is attributed to traffic only on that leg.

Table B **First Pricing Scheme**

Student	Morn	Afternoon	Total
A	$2.00	$2.00	$4.00
B	$2.00	$0.00	$2.00
C	$2.00	$0.00	$2.00
Total	$6.00	$2.00	$8.00

In Scheme B, the riders apportion the cost of each leg in proportion to how many people are on each leg. In the morning, the three users pay $1.33 each so that the revenue generated on the drive is $4.00. In the afternoon, with only one person aboard, the charge is $4.00 for that person. This results in Student A's (the driver) paying $5.33 and the other two paying $1.33 each. Scheme B generates $4.00 revenue for each leg but the cost of a man-trip varies.

Table C

Equal Cost and Charges Per Leg

Second Pricing Scheme by Trips

Leg	Rides	Cost Of Leg	Cost/Student Per Ride
Morning	3	$4.00	$1.33
Afternoon	1	$4.00	$4.00

Total:	$8.00

Table D **Second Pricing Scheme by Students**

Student	Morning	Afternoon	Total for Student
A	$1.33	$4.00	$5.33
B	$1.33	-	$1.33
C	$1.33	-	$1.33
Total:	$4.00	$4.00	$8.00

Another example is from postal circumstances. In carrier street time analysis, carrier access is the time taken away from the route to access the house and load the mail receptacle and return to the route. Apart from load time, the time "up the garden path" (or access) to the house and "back down the path" (deaccess) to the route is attributed to the single class causing a stop. In a PW-Nieto world, the time used in making the access would be attributable to the subclass causing it (which was being carried), but the time caused by the deaccess would be attributable to the classes remaining in the pouch, all but the true cause. The deaccess is necessitated by the access and the trip should be attributable to the same cause not to the mail which happens to be in the leg while the deaccess takes place. This shows that it is treacherous and misleading to allocate costs leg by leg. When asked if mail to be delivered causes the trip from the route to the house, did that same mail cause the trip back to the route? His answer in FGSA/USPS T

11-3 was, yes. This means that mail present on a segment is not coincident with the cause of that segment's costs.

Our two approaches (so far)[8] may be characterized as follows: Our choice is to cost the leg or to cost the joint product: the round trip. If we cost the leg some riders will pay $1.33 per ride and others will pay $4.00 Why is the first or method A above preferable? When there is uneven traffic not at the option of the traveler or shipper there will be wide swings in cost per trip, if we cost each leg. It is not that one user is getting a better product and therefore they should pay more. There is nothing more desirable about the service being offered to incoming trips at BMC's than that offered outgoing trips.

There are really three cases discernable in allocating costs of truck transportation:

. Every leg on its own- allocate cost of each leg by dividing costs of leg by traffic on that leg only.

. Round trip- add up the costs of line haul and back haul. Divide total by traffic (person-trips or CFM).

. Joint determination- this approach recognizes that service standards have a role in determining costs as well as mail volume. A schedule of trips prevents long delay times. The costs of transportation are partitioned through accounting techniques into a small

[8] We shall find that there really are three cases.

number of sectors based on size of vehicles and approximate length of haul (e.g., Intra B, Inter B, Inter SCF, Intra SCF). Within such groups where costs can be expected to be homogeneous total costs are divided by total CFM, a measure of transportation demand.

It is important to realize that all approaches but one aggregate CFM and costs and make a grand quotient within a control group (either the round trip or the accounting sector). Only the each leg on its own method keeps the quotient within the leg exclusively.

IV. Received Economic Theory Pertinent to Transportation and Its Application

A. Theory

There are some salient facts about transportation which should guide its analysis.

1. It is created in bulk. If some potential services are not used, those are gone for ever. This is why it is efficient to have a high load factor. This is also why international tanker (ship) rates fluctuate by a factor of 10 to 1 and more.
2. It is often scheduled for service quality rather than for efficiency. There is a fixed schedule of trips whether passengers or freight eventuates. The schedule is staggered so that demand will be "sufficient." There is usually one trip per day at a minimum between two cities. Commuter railroads run several trains in the middle of the day (albeit with fewer cars) so that maximum waiting time will be reduced.
3. Entrepreneurs prefer to sell units of round trips. This is evident to anyone who has ever tried to purchase a one-way airline ticket.
4. Line haul and back haul are joint products. This is as near to fixed output proportions as we ever come in economics. The miles from New York to Washington are exactly equal to the miles from Washington to New York. As Marshall (see below)tells us that the cost of anything used for several purposes has to be defrayed by its fruits in all of them. In the PS the rules for transportation do not allow mixing mail with other freight. Therefore we cannot haul furniture if not enough mail materializes in order to minimize cost.

To elaborate on number 4 above, we might discuss the following. In the production of transportation services, it is very difficult to produce a line haul without producing a back haul to go along with it. Therefore, the contract costs of purchased transportation would be joint costs.

The useful unit of analysis is the line haul and back haul together. They are a unit because we cannot have the one without the other. This resembles in essential ways the classical joint product of economics: the wool and mutton and the wheat and straw discussed by Alfred Marshall, Principles of Economics (p. 321-323, Eighth Edition, London: Macmillan, 1961). The truck needs to return to its origin to accomplish the next line haul. Similarly, the car in our carpool example above needs to get back to the bedroom community so that it is available to take the group to school in the morning. The trip there and back is more fruitfully seen as a unit in transportation.

Microeconomic theory usually focuses on the pricing problem: What can the enterprise get for the "by product" which is desired in addition to the prime product. By contrast, our problem is one of cost analysis, but it is always maintained that the joint production of two outputs must be seen as a unit. Prof. Panzar, in referring to "the 'segments' or 'legs' of a route...," says that he "[does] not see how their costs could be analyzed separately from those of the route as a whole." (Panzar FGFSA T-11-1(b)).

That the round trip is a logical unit of analysis in transportation is demonstrated in several ways:

- The authority Bowersox, Smykay and Lalonde (BS&L), Physical Distribution Management: (New York: Macmillan, 1968 rev. ed.) is a practical book on transportation analysis and logistics. We provide a quotation from this book which discusses the rational analysis of line-haul cost.
- The difficulty, experienced by many, of purchasing one-way airline tickets is a layman's introduction to this truth acknowledged by transportation professionals. Entrepreneurs

want to cover their return trips when they undertake a line haul. If you are not convinced, try to take a taxi trip which takes the driver out of his normal area.

- The difficulty in renting a car and returning it to a place other than the origin. There is almost always an extra charge for doing so.

BS&L in their standard text on logistics have a chapter on transportation cost analysis. It is entitled, "Transportation Costing." For truck transportation cost what BS&L call line-haul costs[9] are usually analyzed with the round trip as a unit. "because a truck usually goes from an origin to a destination and back, line-haul costs are generated in both directions." Round trip costs is a heading in the following table, 7-2. (p. 169). See LAM-11, p. 5 of 5.

B. HOW MUCH USE CAN WE MAKE OF TRACS DATA VS. TRACS ANALYSIS

We would like very much to design a distribution key for TRACS which eliminates the inequity of charging traffic on light segments high rates. Present indications are that the data forthcoming from TRACS is not reliable. Is there enough quality control? Exhibit LAM 4b shows alternate estimates of cubic feet by two approaches.

Exhibit LAM-4b combines two Library References, one on Standard (A) and one on Standard (B) mail. The Exhibit is in terms of thousands of cubic feet. In the Intra BMC movement these figures from Lib. Ref. H-111 and 135 indicate the ratio of cubic feet between parcel post and standard A as

[9] To be distinguished from terminal and administration cost for example.

4.25 to 1 in favor of standard A. But if we rely on TRACS we find a ratio of CF equal to 1.08 LAM-13. (See Lib. Ref. FGFSA-H-2). This is quite a discrepancy: one estimate is 3.8 times the other. We are despondent about TRACS. The ability to estimate CF and CFM is necessary and the effort is laudable. But what are we to make of a system which makes these contradictory findings.

See LAM 4b. There are further problems with the TRACS data. The mail code KK signifies bulk small parcels, a category which never existed. Somehow TRACS technicians found 225,000 cubic feet in postal quarter 1 of 1996 and 739,000 cubic feet in the second quarter of this mail code. Please see LAM 4a for Quarters 1 and 2 There are different patterns to in-bound and out-bound movements. In one observation, standard A was 33.1% of in-bound movements whereas looking at out-bound movements where bound equals 2, standard A was 37.2% and this is not the most dramatic of comparisons. In-bound and out-bound movements have very different composition. In a situation such as this one we cannot be indifferent as to which type of trips fall in to the random sample because certain types of movements serve some classes more than others and if those are monitored too much cost will be allocated to these classes.

We showed above that charging by the leg and making an "equitable" distribution therein penalizes classes of mail on lightly-traveled routes just as the driver in the carpool is penalized for being the only one on the inbound leg. It is more equitable and efficient to charge every volume unit (CFM) and therefore implicitly "cost out"[10] the round trip as a unit. With regard to witnesses in this case Nieto clearly states that she costs out purchased transportation leg by leg [Tr., 7/3434]. Bradley by contrast, clearly says that to study the problem leg by leg is improper [FGFSA/USPS T13-25].

[10] By "cost out" we mean "find of the costs of."

Panzar says the same thing.

This distribution key would be more in line with economic theory. We could go further with economic theory in the direction of linear or mathematical programming. Such analysis would lead us to calculate costs at the maximum-load point as Meyer, Kain and Wohl (Cambridge: Harvard University Press, 1965) have done in their classic study of urban transportation.[11] In our application here this would suggest calculating costs when the trucks are at their fullest (certainly on outbound trips). This peak-load approach looks at outbound runs only and divides costs as the proportions of mail classes present on those trips. This distribution key is shown in Exhibit LAM-3.

Unfortunately the TRACS data collected are not reliable because (among other things) of the finding DBMC mail on incoming runs: a logical contradiction. Further TRACS data collection problems are shown in LAM 4b. Lib Refs H-111 and H-135 are inconsistent in their estimates of the relation between Parcel Post and Standard A cubic feet.

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In the Opinion and Recommended Decisions of several recent cases, the PRC has found that the identity and integrity of the preferential and nonpreferential transportation systems which once existed separately is now a thing of the past. (R 87-1)

We see first class loading in candidate Distribution Key's of 14%; 11-17% in the fourth quarter of the base year between 10 and 18% for first class including priority. Some 10 % of the cubic foot miles are periodicals. The decline of the distinction between preferential and nonpreferential in

[11]See p. 186 for their decision to charge the construction cost of rapid transit largely to the traffic at the peak.

the transportation system began when non-red tag mailers in second class insisted that the postal service charge "red tag"[12] mailers for the better service they received. Postmaster-general bolger decree that all second class will be preferential. There was a long tradition that magazines were distributed through BMC's.

There is more and more preferential mail on these historically nonpreferential transportation routes. Therefore decisions begin to be made considering service quality and the need to meet service standards. New transportation contracts are entered into because of these considerations and not exclusively because of volume. That transportation cost could vary 97% with volume or even 90 or 95% seems more and more unlikely.

TRACS is preoccupied with proportions to the exclusion of basic piece data. If one parcel were in a container or item, all the space would be allocated to Parcel Post. If three parcels were in the container all the space would be allocated to Parcel Post as well.

Mr. Hatfield's analysis has problems. He suggests treating DBMC differently from Intra BMC. These parcels move with each other on the same truck at the same time. Why should their cost analysis be different? Many other classes of mail are transported for the convenience of the carrier. To make decisions as to whether a particular segment was part of the net pay load in the direction that the pieces traveling or whether for the convenience of carrier would subject rate making to much more detail than it presently has. Mr. Hatfield divided cost in one typology as Inter BMC, Intra BMC, DBMC and Intra SCF. In an other typology, he distinguishes local, intermediate and long distance transportation.

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[12] Red tag means second class items which received preferential service because they were published weekly or more frequently.

The files related to TRACS highway transportation analysis are divided in to the following groups: DESIGN, EDIT and EXPAND. In the Design group, samples are defined. In the EDIT group, data are scrubbed and mistakes are found and cast off. In the EXPAND group, articles are weighted for cubic feet and to convert from pounds to cubic feet and they are expanded to fill the size of items and containers and ultimately the size of the truck. We have concentrated on analysis on the EXPAND group of analysis especially hwy-1 through hwy-12. The results available in LAM-4b are from an exercise which follows the TRACS methodology except for three items:

. An error in PERCONT

. Expansion to the size of the truck is eliminated

FACCAT weighting is alternately used and not used.

Distribution key can be observed for cubic foot miles and cost using the Nieto methodology. These are available in the intra BMC account for both in-bound, out-bound and the union of the two categories which we call "." or "dot.".

There is no question that there is a bias in data collection for TRACS:

. TRACS is not a minimum variance sample.

. TRACS takes 70% of its sample on inbound movements.

Why did PW and PS collect in-bound samples more frequently? It was easier to sit at the BMC where

a lot of shipments come in and collect much data with little travel and in short amount of time. AO's and DU's have less dock activity per hour.

We have shown in the in-bound and out-bound analysis that parcel post is heavily represented in in-bound trips. This has an easy explanation. PS has a large market share in the household to household and household to business parcel post market. PS's comparative advantage is its retail infra structure or set of offices all over the land, well established and convenient to households. That mail is present on in-bound movements to BMC's and AO's. Business to household packages are more likely to be drop shipped at BMC's.[13] Such traffic would not arrive on postal purchased transportation. The weighting of FACCAT is meant to counteract this known bias. The only way to be sure there was a random sample of possible trips is to know the NASS schedule. That is considered proprietary by the PS. I believe that there is a strong likelihood that the sample remains biased in favor of a sampling of in-bound unloadings and the mail classes which are present on those inbound runs.

[13] FGFSA's packages do this largely for quality because of the limited shelf life of the product and desire for freshness.

We used data provided in LR's H-82 (TRACS Highway Sample Design Programs and Documentation) and H-84 TRACS Data Files in Machine Readable Format. We did two types of analysis. We studied the pure data collected by PW and PS. We also did several runs of the SAS program with modifications.

We analyzed implicit cost distributions over mail codes on inbound, outbound (using the BOUND Variables). Our distribution were made in CF, cubic foot miles and costs as shown in Exhibits LAM-3 and LAM-9

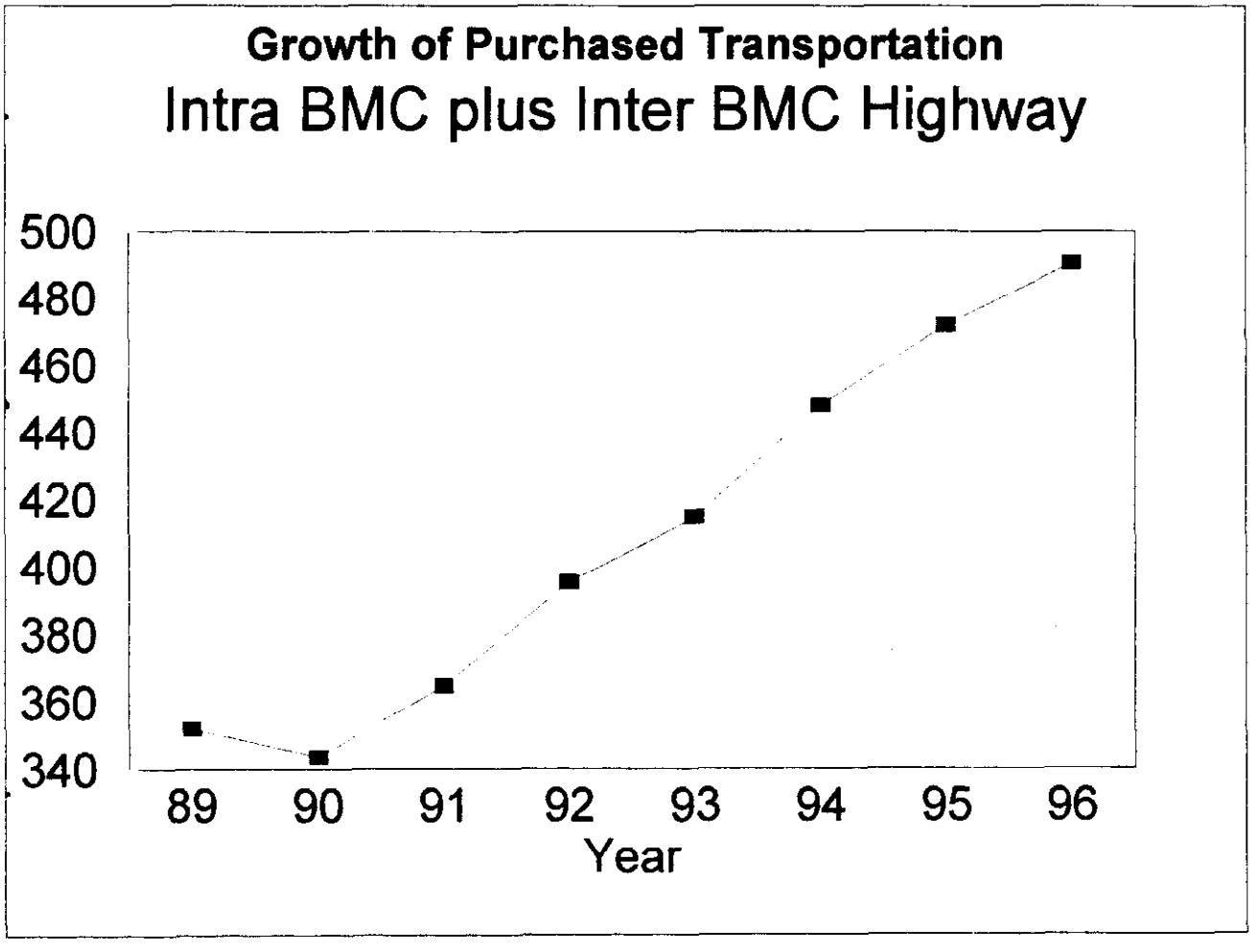
LAM-1

Historical Data on Intra and Inter BMC Purchased Transportation Cost

Year	Intra BMC	Inter BMC	Total
84	144.5	134.4	278.9
85	166.1	154.6	320.7
89	163.7	188.2	351.9
90	161.3	173.7	335
91	185.3	209.2	394.5
92	181.6	214.5	396.1
93	232.3	201.4	433.7
94	248.1	214.5	462.6
95	257.4	223.7	481.1
96	257.1	243	500.1

Source: National Consolidated Trial Balance 1990-96, 1985

C:\WINDOW...ttyGFS\hist\intra.erpp.wb3


Growth of Purchased Transportation
Intra BMC plus Inter BMC Highway
500
480
460
440
420
400
380
360
340
89
90
91
92
93
94
95
96
Year

LAM-2 a

Purchased Transportation FY1996
by Quarter Accounts and Attribution

(1)	(2)	(3)	(4)	(5)
	Intra		Inter	
	Acct No.	Amt (a)	Acct No.	Amt (a)
1996 Q1	53127	44415	53131	48714
	53128	7456	53132	1517
	53129	1368	53133	2174
	53136	4941		
		58180		
1996 Q2	53127	45052	53131	48894
	53128	10322	53132	3856
	53129	1543	53133	2861
	53136	6085		55611
		63002		
1996 Q3	53127	44960	53131	51010
	53128	6374	53132	1438
	53129	1316	53133	2706
	53136	5046		
		57696		
1996 Q4	53127	61708	53131	74011
	53128	6890	53132	1865
	53129	1609	53133	2893
	53136	7900		78769
		78107		

Sources:
a: USPS T-5, Workpaper B-14, Worksheet 14.0.1, p.2
c: Col 5 = Col 4 * Col 3
Col 9 = Col 8 * Col 7

LAM-2b

Cost Accounts Within Purchased Transportation
Which We Study

IntraBMC	53127
Exceptional Service	53128
Emergency Service	53129
Leased Trailers	53136
InterBMC	53131
Exceptional Service	53132
Emergency Service	53133

TRACS Replication for Outbound Runs

ACCOUNT=53127 BOUND=2
PQ196 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types
Intra-BMC

MAILCODE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1st Class	67,605,983	11.74	3,408,194,649	8.31	1,607,169	8.12
2nd Cl Perioc	79,581,325	13.82	5,880,015,821	14.34	2,009,028	10.15
International	1,840,852	0.32	107,769,975	0.26	23,801	0.12
PRI	38,977,752	6.77	1,772,521,718	4.32	697,044	3.52
STD A	183,418,478	31.86	14,904,072,720	36.34	5,851,859	29.55
STD B - Othe	64,976,922	11.29	5,156,461,738	12.57	2,548,389	12.87
STD B - P	139,329,063	24.20	9,787,979,345	23.86	7,065,654	35.68

PQ296 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types
Intra-BMC

MAILCODE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1st Class	109,323,576	18.14	7,753,691,936	14.76	3,351,566	16.33
2nd Cl Perioc	72,184,443	11.98	5,114,335,739	9.73	2,516,920	12.27
International	2,122,343	0.35	119,261,967	0.23	53,081	0.26
PRI	45,277,681	7.51	2,433,286,372	4.63	1,123,873	5.48
STD A	149,120,469	24.74	13,528,516,846	25.75	5,317,618	25.91
STD B - Othe	80,616,798	13.38	8,268,680,322	15.74	2,969,945	14.47
STD B - P	144,013,878	23.90	15,320,410,118	29.16	5,187,844	25.28

PQ396 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types
Intra-BMC

MAILCODE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1st Class	107,263,534	14.95	9,185,781,862	10.88	3,736,241	10.45
2nd Cl Perioc	78,816,840	10.98	9,510,158,221	11.26	3,638,525	10.17
International	2,459,722	0.34	97,160,068	0.12	53,221	0.15
PRI	45,890,579	6.39	3,641,789,628	4.31	1,474,924	4.12
STD A	234,690,210	32.70	30,120,361,835	35.67	14,014,906	39.19
STD B - Othe	81,292,087	11.33	8,716,142,315	10.32	3,489,684	9.76
STD B - P	167,276,206	23.31	23,170,039,508	27.44	9,352,237	26.15

PQ496 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types
Intra-BMC

ACCOUNT=53127 BOUND=2

MAILCODE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1st Class	127,270,796	17.90	10,087,503,790	14.15	4,263,058	13.19
2nd Cl Perioc	98,899,168	13.91	9,141,881,525	12.83	4,211,322	13.03
International	1,930,147	0.27	211,960,607	0.30	106,262	0.33
PRI	60,446,024	8.50	4,434,145,043	6.22	1,874,700	5.80
STD A	189,650,276	26.68	23,792,036,769	33.38	9,927,636	30.72
STD B - Othe	68,045,634	9.57	7,864,558,736	11.03	4,005,167	12.39
STD B - P	164,603,707	23.16	15,738,094,576	22.08	7,929,794	24.54

Source: SAS run y96a11 with data from L.R. H-84 , Nov. 17, 1997.

PQ196 Bound = .

CF, CFM and Cost for Inbound, Outbound Movements and Union, Various Mail Classes

LINE	Mail Category	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1	First Class Letters	44,954,516	5.73	3,192,077,217	4.65	1,502,869	4.49
2	First Class Presort	25,453,944	3.25	1,321,645,999	1.93	587,551	1.76
3	Single-PC Cards	244,681	0.03	9,900,170	0.01	4,454	0.01
4	Prest Postcards	57,933	0.01	2,542,921	0.00	1,177	0.00
5	Total First Class	70,711,074	9.02	4,526,166,306	6.60	2,096,050	6.27
6	Priority	36,877,313	4.70	2,475,685,375	3.61	1,016,116	3.04
7	Express	845,758	0.11	32,745,528	0.05	16,424	0.05
8	Periodicals	84,121,040	10.73	6,495,409,463	9.47	2,598,884	7.77
9	Std A Single Piece	9,334,149	1.19	1,006,278,299	1.47	463,719	1.39
10	Std A ECR	49,013,095	6.25	4,771,943,508	6.96	2,921,048	8.73
11	Std A Other	169,860,723	21.67	15,388,469,739	22.43	6,829,481	20.42
12	Total Reg Std A	228,207,966	29.11	21,166,691,545	30.86	10,214,248	30.54
13	NonPref ECR	3,063,355	0.39	220,634,861	0.32	81,759	0.24
14	NonPref Other	17,369,743	2.22	1,794,507,223	2.62	681,198	2.04
15	Total Std A	248,641,064	31.71	23,181,833,629	33.79	10,977,205	32.82
16	Small Parcels	225,193	0.03	13,680,498	0.02	5,609	0.02
17	Parcel Post	223,600,427	28.52	21,096,269,312	30.75	11,472,201	34.30
18	Bound Printed Matte	56,151,668	7.16	4,518,848,849	6.59	2,484,651	7.43
19	Std B Special	42,358,627	5.40	4,367,076,708	6.37	1,797,805	5.38
20	Std B Library	10,326,617	1.32	1,002,374,601	1.46	541,393	1.62
21	Penalty-USPS	2,674,884	0.34	284,885,962	0.42	111,879	0.33
22	Free for Blind	658,955	0.08	43,728,285	0.06	58,112	0.17
23	International	6,828,011	0.87	558,089,631	0.81	269,955	0.81
24	Total All Mail	784,020,631	100.00	68,596,794,146	100.00	33,446,283	100.00

PQ196 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=1

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1	First Class Letters	12,813,826	4.21	1,477,023,344	4.48	663,789	4.20
2	First Class Presort	1,627,102	0.54	129,172,495	0.39	47,679	0.30
3	Single-PC Cards	53,692	0.02	5,266,019	0.02	2,126	0.01
4	Prest Postcards	15,671	0.01	1,145,811	0.00	525	0.00
5	Total First Class	14,510,291	4.77	1,612,607,668	4.90	714,119	4.52
6	Priority	11,933,348	3.92	1,142,375,085	3.47	488,765	3.10
7	Express	140,906	0.05	8,340,580	0.03	3,624	0.02
8	Periodicals	19,176,340	6.31	1,263,607,566	3.84	834,787	5.29
9	Std A Single Piece	5,769,829	1.90	696,297,700	2.11	334,825	2.12
10	Std A ECR	10,417,531	3.43	1,453,806,270	4.41	1,738,231	11.01
11	Std A Other	71,491,181	23.51	7,030,018,339	21.34	3,510,565	22.24
12	Total Reg Std A	87,678,541	28.84	9,180,122,308	27.87	5,583,621	35.37
13	NonPref ECR	338,171	0.11	57,589,728	0.17	24,831	0.16
14	NonPref Other	6,868,558	2.26	696,476,721	2.11	252,863	1.60
15	Total Std A	94,885,271	31.21	9,934,188,757	30.16	5,861,315	37.13
17	Parcel Post	101,383,527	33.34	12,662,773,499	38.44	4,929,651	31.22
18	Bound Printed Matte	20,369,801	6.70	1,521,211,955	4.62	770,439	4.88

7	Express	290,174	0.09	147,209,641	0.12	57,774	0.12
8	Periodicals	64,827,561	19.32	24,595,414,620	20.59	9,711,461	20.54
9	Std A Single Piece	3,230,475	0.96	1,715,289,689	1.44	675,246	1.43
10	Std A ECR	8,644,740	2.58	3,725,515,149	3.12	1,464,426	3.10
11	Std A Other	66,954,175	19.95	24,162,975,476	20.23	9,503,071	20.10
12	Total Reg Std A	78,829,390	23.49	29,603,780,314	24.79	11,642,743	24.62
13	NonPref ECR	2,119,140	0.63	627,591,032	0.53	244,519	0.52
14	NonPref Other	17,044,781	5.08	6,672,046,171	5.59	2,641,889	5.59
15	Total Std A	97,993,311	29.20	36,903,417,517	30.90	14,529,151	30.72
16	Small Parcels	146,242	0.04	71,898,970	0.06	28,256	0.06
17	Parcel Post	86,818,856	25.87	28,880,348,631	24.18	11,378,750	24.06
18	Bound Printed Matte	11,826,607	3.52	3,628,090,210	3.04	1,421,319	3.01
19	Std B Special	14,770,833	4.40	6,194,984,150	5.19	2,465,835	5.21
20	Std B Library	3,354,570	1.00	1,266,349,510	1.06	495,330	1.05
21	Penalty-USPS	3,420,830	1.02	1,156,567,115	0.97	463,664	0.98
22	Free for Blind	521,512	0.16	223,807,520	0.19	87,939	0.19
23	International	1,900,935	0.57	1,042,813,838	0.87	410,405	0.87
24	Total All Mail	335,612,762	100.00	119,429,385,825	100.00	47,289,829	100.00

PQ296 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=.

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1	First Class Letters	75,802,597	9.58	6,674,018,571	8.64	2,683,691	8.35
2	First Class Presort	31,688,725	4.01	2,772,098,240	3.59	1,216,862	3.78
3	Single-PC Cards	247,078	0.03	22,664,926	0.03	8,958	0.03
4	Prest Postcards	5,052,764	0.64	343,361,067	0.44	157,763	0.49
5	Total First Class	112,791,164	14.26	9,812,142,805	12.70	4,067,275	12.65
6	Priority	58,567,334	7.40	5,942,772,878	7.69	2,315,839	7.20
7	Express	2,100,183	0.27	62,858,705	0.08	49,254	0.15
8	Periodicals	77,320,330	9.77	6,211,774,408	8.04	2,997,513	9.32
9	Std A Single Piece	15,638,855	1.98	1,191,882,451	1.54	501,680	1.56
10	Std A ECR	33,321,362	4.21	3,340,428,772	4.32	1,777,780	5.53
11	Std A Other	132,923,463	16.80	11,816,521,573	15.29	4,969,830	15.46
12	Total Reg Std A	181,883,679	22.99	16,348,832,795	21.16	7,249,290	22.55
13	NonPref ECR	3,230,256	0.41	397,574,914	0.51	171,785	0.53
14	NonPref Other	22,378,892	2.83	2,196,186,736	2.84	949,425	2.95
15	Total Std A	207,492,827	26.23	18,942,594,446	24.51	8,370,500	26.03
16	Small Parcels	739,461	0.09	24,524,708	0.03	1,932	0.01
17	Parcel Post	222,344,175	28.10	23,806,063,318	30.80	9,525,137	29.63
18	Bound Printed Matte	42,554,332	5.38	3,752,695,135	4.86	1,649,902	5.13
19	Std B Special	44,405,081	5.61	6,292,430,623	8.14	2,167,681	6.74
20	Std B Library	12,754,207	1.61	1,532,860,345	1.98	618,328	1.92
21	Penalty-USPS	1,160,658	0.15	107,431,533	0.14	52,746	0.16
22	Free for Blind	4,145,434	0.52	529,321,020	0.68	216,880	0.67
23	International	4,784,332	0.60	263,615,643	0.34	118,677	0.37
24	Total All Mail	791,159,519	100.00	77,281,085,566	100.00	32,151,665	100.00

PQ296 Distribution Keys Usir UNLOADED Mail (Weighted)

19	Std B Special	25,704,997	8.45	3,175,741,947	9.64	1,304,997	8.27
20	Std B Library	8,537,183	2.81	839,987,433	2.55	476,373	3.02
21	Penalty-USPS	1,349,481	0.44	262,632,067	0.80	95,261	0.60
22	Free for Blind	620,718	0.20	40,606,438	0.12	57,059	0.36
23	International	5,433,925	1.79	474,045,281	1.44	251,281	1.59
24	Total All Mail	304,045,789	100.00	32,938,118,276	100.00	15,787,672	100.00

PQ196 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=2

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1	First Class Letters	32,140,690	6.70	1,715,053,874	4.81	839,080	4.75
2	First Class Presort	23,826,841	4.96	1,192,473,504	3.34	539,871	3.06
3	Single-PC Cards	190,989	0.04	4,634,151	0.01	2,328	0.01
4	Prest Postcards	42,263	0.01	1,397,110	0.00	652	0.00
5	Total First Class	56,200,783	11.71	2,913,558,639	8.17	1,381,931	7.83
6	Priority	24,943,965	5.20	1,333,310,290	3.74	527,351	2.99
7	Express	704,852	0.15	24,404,948	0.07	12,800	0.07
8	Periodicals	64,944,700	13.53	5,231,801,897	14.67	1,764,097	9.99
9	Std A Single Piece	3,564,320	0.74	309,980,599	0.87	128,894	0.73
10	Std A ECR	38,595,563	8.04	3,318,137,238	9.31	1,182,817	6.70
11	Std A Other	98,369,542	20.49	8,358,451,400	23.44	3,318,916	18.79
12	Total Reg Std A	140,529,425	29.28	11,986,569,237	33.61	4,630,627	26.22
13	NonPref ECR	2,725,184	0.57	163,045,133	0.46	56,928	0.32
14	NonPref Other	10,501,185	2.19	1,096,030,502	3.08	428,335	2.43
15	Total Std A	153,755,794	32.03	13,247,644,872	37.15	5,115,890	28.97
16	Small Parcels	225,193	0.05	13,680,498	0.04	5,609	0.03
17	Parcel Post	122,216,900	25.46	8,433,495,813	23.65	6,542,550	37.05
18	Bound Printed Matte	35,781,867	7.45	2,997,636,893	8.41	1,714,212	9.71
19	Std B Special	16,653,629	3.47	1,191,334,761	3.34	492,808	2.79
20	Std B Library	1,789,434	0.37	162,387,168	0.46	65,020	0.37
21	Penalty-USPS	1,325,403	0.28	22,253,895	0.06	16,618	0.09
22	Free for Blind	38,238	0.01	3,121,846	0.01	1,052	0.01
23	International	1,394,086	0.29	84,044,350	0.24	18,674	0.11
24	Total All Mail	479,974,843 100.00		35,658,675,869	100.00	17,658,612	100.00

PQ196 Distribution Keys Usir UNLOADED Mail (Weighted)
Inter-BMC

ACCOUNT=53131

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1	First Class Letters	27,047,645	8.06	9,001,176,913	7.54	3,570,273	7.55
2	First Class Presort	6,829,369	2.03	2,148,792,053	1.80	886,327	1.87
3	Single-PC Cards	191,900	0.06	63,112,480	0.05	29,411	0.06
4	Prest Postcards	10,587	0.00	3,671,059	0.00	1,451	0.00
5	Total First Class	34,079,500	10.15	11,216,752,505	9.39	4,487,462	9.49
6	Priority	15,661,831	4.67	4,101,731,598	3.43	1,752,483	3.71

PQ296 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=1

LINE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1 First Class Letters	21,418,825	7.07	2,346,385,701	7.19	830,915	5.67
2 First Class Presort	4,044,913	1.34	580,596,494	1.78	235,188	1.61
3 Single-PC Cards	119,705	0.04	9,402,673	0.03	3,754	0.03
4 Prest Postcards	1,139	0.00	117,706	0.00	49	0.00
5 Total First Class	25,584,582	8.45	2,936,502,575	9.00	1,069,906	7.30
6 Priority	23,645,618	7.81	3,788,074,767	11.61	1,329,192	9.07
7 Express	105,574	0.03	12,320,338	0.04	5,171	0.04
8 Periodicals	18,658,032	6.16	1,723,457,313	5.28	890,470	6.08
9 Std A Single Piece	7,127,539	2.35	647,334,357	1.98	268,412	1.83
10 Std A ECR	4,527,463	1.49	471,389,327	1.44	613,209	4.19
11 Std A Other	61,776,568	20.40	5,893,058,843	18.06	2,637,209	18.00
12 Total Reg Std A	73,431,570	24.25	7,011,782,526	21.49	3,518,830	24.02
13 NonPref ECR	397,578	0.13	18,433,840	0.06	7,199	0.05
14 NonPref Other	14,371,915	4.75	1,120,276,806	3.43	497,529	3.40
15 Total Std A	88,201,062	29.12	8,150,493,171	24.98	4,023,558	27.46
17 Parcel Post	100,362,670	33.14	10,316,676,617	31.62	4,870,897	33.25
18 Bound Printed Matte	12,800,560	4.23	1,266,521,160	3.88	637,097	4.35
19 Std B Special	18,972,808	6.26	2,896,124,836	8.88	1,196,386	8.18
20 Std B Library	10,060,132	3.32	1,199,873,134	3.68	466,271	3.18
21 Penalty-USPS	612,462	0.20	64,380,434	0.20	32,745	0.22
22 Free for Blind	869,965	0.29	111,277,550	0.34	54,452	0.37
23 International	2,974,900	0.98	160,421,790	0.49	73,090	0.50
24 Total All Mail	302,848,365	100.00	32,628,123,685	100.00	14,651,236	100.00

PQ296 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=2

LINE	CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percent Cost
1 First Class Letters	54,383,773	11.14	4,327,632,870	9.69	1,852,776	10.59
2 First Class Presort	27,643,812	5.66	2,191,501,746	4.91	981,675	5.61
3 Single-PC Cards	127,372	0.03	13,262,252	0.03	5,204	0.03
4 Prest Postcards	5,051,625	1.03	343,243,361	0.77	157,714	0.90
5 Total First Class	87,206,582	17.86	6,875,640,230	15.40	2,997,369	17.13
6 Priority	34,921,716	7.15	2,154,696,111	4.83	986,648	5.64
7 Express	1,994,609	0.41	50,538,367	0.11	44,083	0.25
8 Periodicals	58,662,298	12.01	4,488,317,095	10.05	2,107,043	12.04
9 Std A Single Piece	8,511,315	1.74	544,548,094	1.22	233,267	1.33
10 Std A ECR	28,793,899	5.90	2,869,039,445	6.43	1,164,571	6.65
11 Std A Other	71,146,895	14.57	5,923,462,731	13.27	2,332,621	13.33
12 Total Reg Std A	108,452,110	22.21	9,337,050,270	20.91	3,730,459	21.32
13 NonPref ECR	2,832,678	0.58	379,141,075	0.85	164,586	0.94
14 NonPref Other	8,006,978	1.64	1,075,909,930	2.41	451,896	2.58

15	Total Std A	119,291,765	24.43	10,792,101,274	24.17	4,346,941	24.84
16	Small Parcels	739,461	0.15	24,524,708	0.05	1,932	0.01
17	Parcel Post	121,981,505	24.98	13,489,386,701	30.21	4,654,240	26.60
18	Bound Printed Matte	29,753,773	6.09	2,486,173,976	5.57	1,012,805	5.79
19	Std B Special	25,432,273	5.21	3,394,305,787	7.60	969,295	5.54
20	Std B Library	2,694,075	0.55	332,987,211	0.75	152,057	0.87
21	Penalty-USPS	548,196	0.11	43,051,099	0.10	20,001	0.11
22	Free for Blind	3275468	0.67	418,043,470	0.94	162,428	0.93
23	International	1,809,432	0.37	103,193,853	0.23	45,588	0.26
24	Total All Mail	488,311,154 100.00		44,652,961,881	100.00	17,500,429	100.00

PQ296 Distribution Keys Usir UNLOADED Mail (Weighted)
Inter-BMC

ACCOUNT=53131

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percen Cost
1	First Class Letters	29,112,363	9.58	8,524,907,524	7.10	3,427,915	7.11
2	First Class Presort	6,126,209	2.02	1,626,400,067	1.35	656,482	1.36
3	Single-PC Cards	100,444	0.03	30,906,065	0.03	12,420	0.03
4	Prest Postcards	5,815	0.00	1,172,677	0.00	471	0.00
5	Total First Class	35,344,831	11.63	10,183,386,334	8.48	4,097,289	8.50
6	Priority	3,050,772	1.00	1,008,648,305	0.84	404,998	0.84
7	Express	33,599	0.01	5,711,747	0.00	2,296	0.00
8	Periodicals	68,277,771	22.47	26,072,946,343	21.72	10,541,486	21.86
9	Std A Single Piece	5,564,583	1.83	3,103,490,925	2.59	1,230,899	2.55
10	Std A ECR	7,191,808	2.37	2,706,668,126	2.25	1,089,421	2.26
11	Std A Other	61,342,067	20.19	26,626,057,318	22.18	10,715,016	22.22
12	Total Reg Std A	74,098,458	24.38	32,436,216,369	27.02	13,035,336	27.04
13	NonPref ECR	1,722,719	0.57	664,066,891	0.55	263,685	0.55
14	NonPref Other	15,559,011	5.12	6,146,244,238	5.12	2,509,133	5.20
15	Total Std A	91,380,188	30.07	39,246,527,498	32.69	15,808,153	32.79
16	Small Parcels	224,090	0.07	109,624,499	0.09	44,069	0.09
17	Parcel Post	71,022,643	23.37	28,350,465,163	23.62	11,293,922	23.43
18	Bound Printed Matte	10,685,170	3.52	4,484,568,523	3.74	1,796,712	3.73
19	Std B Special	15,469,009	5.09	6,994,354,389	5.83	2,789,849	5.79
20	Std B Library	3,558,540	1.17	1,644,399,436	1.37	663,244	1.38
21	Penalty-USPS	1,258,142	0.41	219,206,531	0.18	86,675	0.18
22	Free for Blind	527,749	0.17	396,528,521	0.33	159,404	0.33
23	International	3,051,342	1.00	1,332,202,089	1.11	524,381	1.09
24	Total All Mail	303,883,846	100.00	120,048,569,380	100.00	48,212,481	100.00

PQ396 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=.

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percen Cost

1	First Class Letters	82,266,991	9.14	8,928,582,219	8.40	3,396,567	7.79
2	First Class Presort	48,041,022	5.34	3,891,105,157	3.66	1,669,668	3.83
3	Single-PC Cards	809,859	0.09	84,117,432	0.08	36,885	0.08
4	Prest Postcards	265,939	0.03	17,258,186	0.02	2,918	0.01
5	Total First Class	131,383,812	14.60	12,921,062,995	12.16	5,106,038	11.72
6	Priority	45,582,384	5.07	4,149,098,488	3.91	1,647,004	3.78
7	Express	891,565	0.10	67,894,578	0.06	45,310	0.10
8	Periodicals	96,633,971	10.74	11,452,600,410	10.78	4,113,671	9.44
9	Std A Single Piece	16,896,391	1.88	2,042,566,490	1.92	865,233	1.99
10	Std A ECR	36,016,039	4.23	4,995,840,988	4.70	2,088,784	4.79
11	Std A Other	188,094,148	20.90	24,162,677,238	22.74	10,977,396	25.19
12	Total Reg Std A	243,006,578	27.01	31,201,084,716	29.37	13,931,413	31.97
13	NonPref ECR	2,823,664	0.31	429,711,674	0.40	191,241	0.44
14	NonPref Other	30,890,553	3.43	3,243,885,387	3.05	1,322,048	3.03
15	Total Std A	276,722,796	30.75	34,874,681,777	32.82	15,444,701	35.44
16	Small Parcels	597,106	0.07	75,047,108	0.07	30,706	0.07
17	Parcel Post	231,535,036	25.73	28,710,400,875	27.02	12,023,062	27.59
18	Bound Printed Matte	50,528,781	5.62	4,643,988,866	4.37	1,932,868	4.44
19	Std B Special	45,917,265	5.10	7,488,830,423	7.05	2,475,771	5.68
20	Std B Library	10,865,388	1.21	986,667,189	0.93	421,591	0.97
21	Penalty-USPS	3,146,529	0.35	409,524,097	0.39	187,998	0.43
22	Free for Blind	830,283	0.09	60,530,195	0.06	23,464	0.05
23	International	5,137,628	0.57	410,034,146	0.39	127,016	0.29
24	Total All Mail	899,772,545	100.00	106,250,361,149	100.00	43,579,203	100.00

PQ396 Distribution Keys Usir UNLOADED Mail (Weighted)
Intra-BMC

ACCOUNT=53127 BOUND=1

LINE		CuFt	Percent CuFt	CFM	Percent CFM	Cost	Percen Cost
1	First Class Letters	31,609,961	10.37	3,900,544,507	11.20	1,516,479	10.46
2	First Class Presort	14,312,701	4.69	1,457,342,405	4.19	576,270	3.98
3	Single-PC Cards	252,788	0.08	40,444,511	0.12	16,472	0.11
4	Prest Postcards	235,399	0.08	15,236,009	0.04	1,917	0.01
5	Total First Class	46,410,849	15.22	5,413,567,432	15.55	2,111,138	14.57
6	Priority	9,942,003	3.26	1,318,253,185	3.79	538,561	3.72
7	Express	51,911	0.02	3,979,089	0.01	2,182	0.02
8	Periodicals	32,015,115	10.50	4,026,839,230	11.56	1,456,901	10.05
9	Std A Single Piece	6,464,928	2.12	493,322,243	1.42	249,867	1.72
10	Std A ECR	5,306,598	1.74	753,047,105	2.16	285,775	1.97
11	Std A Other	59,449,396	19.50	7,126,105,280	20.46	3,220,975	22.22
12	Total Reg Std A	71,220,922	23.36	8,372,474,629	24.04	3,756,616	25.92
13	NonPref ECR	615,938	0.20	78,356,742	0.23	38,752	0.27
14	NonPref Other	12,003,785	3.94	1,177,225,321	3.38	459,996	3.17
15	Total Std A	83,840,645	27.50	9,628,056,691	27.65	4,255,365	29.36
16	Small Parcels	558,958	0.18	65,398,057	0.19	26,813	0.19
17	Parcel Post	82,729,812	27.14	8,159,893,464	23.43	4,086,675	28.20
18	Bound Printed Matte	11,242,427	3.69	897,018,214	2.58	333,533	2.30

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Estimates of Parcel Post and Standard A CF From Non-TRACS Sources

Panel A **Parcel Post**

Mail Category	Intra BMC		Cubic Feet (000)
Parcel Post	22,497	a	
DBMC	70,468	b	
	92,965		
	Inter BMC		
Parcel Post	42,556	c	

Source: Lib. Ref. H-135, Standard Mail (B) Parcel Post Volume and Cubic Feet Data Distribution by Weight and Zone and BMC/ASF - GFY 1996, Attachment I.
a. p. 32
b. p. 44
c. p. 38

Panel B **Standard (A)**

	Cubic Feet (000) Inter BMC	Intra BMC
Standard(A)	136,980	395,737

Source: Lib Ref. H-111 Dropship Savings in Periodicals and Standard Mail Appendix A, Table 4 and conversion factor .056583 = 1/17,673 from TRACS program "hwy 1", p. 171, Lib. Ref. H- 82.

Panel C **Summary Figures**

	Inter BMC		Intra BMC	
Parcel Post	42,600	a	92,965	b
Standard(A)	136,980	c	395,737	d

Sources: a Panel A . c Panel B
b Panel A d Panel B

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Impact of Drop Shipping on Workload
In Intra-BMC and Inter BMC Purchased Transportation

		1991	1996	
Standard (A)	mail not ds beynd BMC e/	41914.1	33056.2	
	lb St (A)	5214.6	4546.5	0.872
Standard (B)	w. DBMC correction	1966.8	2442.6	1.242
		7181.4	**6989.1**	0.973

Standard A Mail

1991			1996	
	Standard			**Standard A**
Dest. SCF Entry	6619	**SCF DE**		20.26
DDU Entry	1821	**DDU DE**		5.87
	8440			
			59.3	26.13
Total BR Regular	50354.1	Tot St. A Reg		59331.2
Dst SCF or Dest DDI	8440	Single Piece		-145
not ds beynd BMC	41914.1	Dst SCF or Dest D DDU		-26130
mail not ds beynd BMC e/	41914.1			33056.2
	ratio			0.7887
	change in workload measured by pieces			-21.1%

Notes:
a. Billing determinants 1991
b. SCF DE = SCF Destination Entry
c. Billing determinants 1996
d. ds = drop-shipped
e. "ds beyond BMC" means to SCF , AO or DU.

		Standard B Mail				
		1991		1996		
	Mail Pieces		Weight	Pieces	Weight	
1	**PP**	129.9	660.2	212.8	1094.9	
2	**BPM**	363.2	917.4	516.1	1231.3	
3	**Special**	144.9	285.5	189.8	319.4	
4	**Library**	40	116.9	30.1	51	
5	**Total**	678	1980.0	948.8	2696.6	bef DBMC adjust
	ratio of workload			1.3619		
6	lbs/pc PP		5.1447		5.2688	
7	DBMC PP (mills)		5.12		96.41	
8	lbs saved millions		26.3		508.0	
9	half of DBMC savings		13.2		254.0	**0.9732**
10	Standard (B) after DBMC adj		**1966.8**		**2442.6**	1.242

dropship.incr.purch2.wb3

DBMC PP avoids inter BMC transp but it does not avoid intraBMC transp

LAM-7

Price Index of Truck Transportation Except Local (a)

Jun	1992	100.0	
Jul	1992	99.8	
Aug	1992	99.7	
Sep	1992	99.5	
Oct	1992	99.5	
Nov	1992	99.4	
Dec	1992	99.4	
Annual	1992		
Jan	1993	100.7	
Feb	1993	100.5	
Mar	1993	100.6	
Apr	1993	100.6	
May	1993	100.3	
Jun	1993	100.8	
Jul	1993	100.1	
Aug	1993	100.8	
Sep	1993	100.8	
Oct	1993	100.8	
Nov	1993	101.1	
Dec	1993	101.1	
Annual	1993		100.7
Jan	1994	101.5	
Feb	1994	102.1	
Mar	1994	102.3	
Apr	1994	102.4	
May	1994	102.6	
Jun	1994	103.0	
Jul	1994	103.2	
Aug	1994	103.4	
Sep	1994	103.5	
Oct	1994	103.8	
Nov	1994	103.8	
Dec	1994	104.2	
Annual	1994		103.0
Jan	1995	104.4	
Feb	1995	105.0	
Mar	1995	105.1	
Apr	1995	105.0	
May	1995	105.1	
Jun	1995	105.4	
Jul	1995	104.7	
Aug	1995	105.4	
Sep	1995	105.3	
Oct	1995	105.6	
Nov	1995	105.5	
Dec	1995	105.0	
Annual	1995		105.1
Jan	1996	106.0	
Feb	1996	106.7	
Mar	1996	106.8	

Apr	1996	106.8	
May	1996	107.0	
Jun	1996	108.6	
Jul	1996	107.4	
Aug	1996	107.7	
Sep	1996	107.9	
Oct	1996	108.7	
Nov	1996	108.7	
Dec	1996	108.7	
Annual	1996		107.6
Jan	1997	109.9	
Feb	1997	110.3	
Mar	1997	110.1	
Apr	1997	110.4	
May	1997	110.5	
Jun	1997	110.5	
Jul	1997	110.8	
Aug	1997	111.2	
Sep	1997	111.1	
Oct	1997	111.3	
Nov	1997	111.0	

US Bureau of Labor Statistics, labstat Internet site, series PCU4213#P

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Estimation of Annual Rate of Growth of Trucking Price index

month	Yr.	Index	nat. log.	t
Jun	1992	100.0	4.60517	1
Jul	1992	99.8	4.603168	2
Aug	1992	99.7	4.602166	3
Sep	1992	99.5	4.600158	4
Oct	1992	99.5	4.600158	5
Nov	1992	99.4	4.599152	6
Dec	1992	99.4	4.599152	7
Jan	1993	100.7	4.612146	8
Feb	1993	100.5	4.610158	9
Mar	1993	100.6	4.611152	10
Apr	1993	100.6	4.611152	11
May	1993	100.3	4.608166	12
Jun	1993	100.8	4.613138	13
Jul	1993	100.1	4.60617	14
Aug	1993	100.8	4.613138	15
Sep	1993	100.8	4.613138	16
Oct	1993	100.8	4.613138	17
Nov	1993	101.1	4.61611	18
Dec	1993	101.1	4.61611	19
Jan	1994	101.5	4.620059	20
Feb	1994	102.1	4.625953	21
Mar	1994	102.3	4.62791	22
Apr	1994	102.4	4.628887	23
May	1994	102.6	4.630838	24
Jun	1994	103.0	4.634729	25
Jul	1994	103.2	4.636669	26
Aug	1994	103.4	4.638605	27
Sep	1994	103.5	4.639572	28
Oct	1994	103.8	4.642466	29
Nov	1994	103.8	4.642466	30
Dec	1994	104.2	4.646312	31
Jan	1995	104.4	4.64823	32
Feb	1995	105.0	4.65396	33
Mar	1995	105.1	4.654912	34
Apr	1995	105.0	4.65396	35
May	1995	105.1	4.654912	36
Jun	1995	105.4	4.657763	37
Jul	1995	104.7	4.651099	38
Aug	1995	105.4	4.657763	39
Sep	1995	105.3	4.656813	40
Oct	1995	105.6	4.659658	41
Nov	1995	105.5	4.658711	42
Dec	1995	105.0	4.65396	43
Jan	1996	106.0	4.663439	44
Feb	1996	106.7	4.670021	45
Mar	1996	106.8	4.670958	46
Apr	1996	106.8	4.670958	47
May	1996	107.0	4.672829	48
Jun	1996	108.6	4.687671	49
Jul	1996	107.4	4.67656	50

Regression Output:

Constant		4.588696
Std Err of Y Est		0.005332
R Squared		0.978215
No. of Observations		66
Degrees of Freedom		64
X Coefficient(s)	0.001847	
Std Err of Coef.	3.4E-05	
t value		53.60731
monthly growth fact		1.022389
moly rog	0.022389	
rate of growth	**2.238904**	% per yea

Aug	1996	107.7	4.67935	51
Sep	1996	107.9	4.681205	52
Oct	1996	108.7	4.688592	53
Nov	1996	108.7	4.688592	54
Dec	1996	108.7	4.688592	55
Jan	1997	109.9	4.699571	56
Feb	1997	110.3	4.703204	57
Mar	1997	110.1	4.701389	58
Apr	1997	110.4	4.70411	59
May	1997	110.5	4.705016	60
Jun	1997	110.5	4.705016	61
Jul	1997	110.8	4.707727	62
Aug	1997	111.2	4.71133	63
Sep	1997	111.1	4.710431	64
Oct	1997	111.3	4.712229	65
Nov	1997	111.0	4.70953	66

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Totals for Mailcodes
Account 53127, BOUND 1

MAILCODE	PIECES	Percent	WT	Percent	CUFT	Percent
A	7,619	15.16	459.91	5.10	32.98	4.25
B	1,616	3.21	69.60	0.77	4.99	0.64
C	305	0.61	0.91	0.01	0.07	0.01
D	33	0.07	0.45	0.01	0.03	0.00
E	213	0.42	1.51	0.02	0.11	0.01
F	49	0.10	0.33	0.00	0.02	0.00
H	175	0.35	342.28	3.79	27.07	3.49
I	62	0.12	15.94	0.18	2.25	0.29
J	1,766	3.51	627.32	6.95	35.76	4.61
K	629	1.25	83.19	0.92	6.90	0.89
L	1,382	2.75	162.97	1.81	9.22	1.19
M	29,112	57.91	2,875.73	31.88	162.72	20.99
N	527	1.05	34.69	0.38	2.12	0.27
O	5,140	10.22	387.08	4.29	23.65	3.05
P	445	0.89	2,223.56	24.65	316.93	40.88
Q	243	0.48	518.13	5.74	34.79	4.49
R	375	0.75	623.56	6.91	58.90	7.60
S	57	0.11	212.94	2.36	15.80	2.04
T	102	0.20	7.53	0.08	0.53	0.07
U	89	0.18	55.06	0.61	5.36	0.69
V	11	0.02	0.88	0.01	0.07	0.01
W	252	0.50	114.75	1.27	7.06	0.91
Y	12	0.02	80.56	0.89	11.02	1.42
AA	10	0.02	1.13	0.01	0.13	0.02
DD	8	0.02	0.64	0.01	0.06	0.01
EE	1	0.00	1.31	0.01	0.08	0.01
GG	1	0.00	0.06	0.00	0.01	0.00
HH	7	0.01	1.27	0.01	0.09	0.01
II	1	0.00	0.31	0.00	0.02	0.00
LL	28	0.06	116.31	1.29	16.58	2.14
	50,270	100.00	9,019.91	100.00	775.31	100.00

Totals for Mailcodes
Account 53127, BOUND 2

MAILCODE	PIECES	Percent	WT	Percent	CUFT	Percent
A	3,483	9.55	300.27	4.70	21.53	4.10
B	6,123	16.79	241.83	3.78	17.34	3.30
C	1	0.00	0.06	0.00	0.00	0.00
D	5	0.01	0.05	0.00	0.00	0.00
E	175	0.48	1.45	0.02	0.10	0.02
F	41	0.11	0.31	0.00	0.02	0.00
H	166	0.46	293.38	4.59	23.21	4.42
I	44	0.12	35.50	0.56	5.01	0.95
J	1,995	5.47	515.81	8.07	29.40	5.60
K	309	0.85	40.13	0.63	3.33	0.63
L	3,864	10.59	289.94	4.54	16.41	3.12
M	16,010	43.89	2,104.70	32.92	119.09	22.68
N	403	1.10	33.50	0.52	2.05	0.39
O	3,170	8.69	207.83	3.25	12.70	2.42
P	190	0.52	860.13	13.45	122.59	23.35
Q	174	0.48	496.13	7.76	33.31	6.34
R	104	0.29	209.38	3.28	19.78	3.77
S	25	0.07	44.31	0.69	3.29	0.63
T	20	0.05	30.31	0.47	2.15	0.41
U	2	0.01	29.19	0.46	2.84	0.54
V	1	0.00	0.19	0.00	0.01	0.00
Y	6	0.02	5.75	0.09	0.79	0.15
AA	5	0.01	2.38	0.04	0.28	0.05
BB	4	0.01	1.31	0.02	0.15	0.03
DD	2	0.01	0.06	0.00	0.01	0.00
EE	1	0.00	1.94	0.03	0.11	0.02
FF	1	0.00	3.81	0.06	0.46	0.09
HH	8	0.02	0.27	0.00	0.02	0.00
II	3	0.01	25.94	0.41	1.87	0.36
JJ	2	0.01	11.81	0.18	1.65	0.31
KK	1	0.00	3.13	0.05	0.30	0.06
LL	117	0.32	596.00	9.32	84.95	16.18
MM	20	0.05	5.75	0.09	0.33	0.06
NN	2	0.01	0.13	0.00	0.01	0.00
	36,477	100.00	6,392.64	100.00	525.09	100.00

LAM-9 b

Utilization of Truck Floor Space

Year	Intra BMC	Inter BMC
1993	58.35	73.00
1994	57.62	70.00
1995	57.40	68.32
1996	53.67	64.62

Source: Response to FGFSA/USPS J-2-12, Attachment 1

RESPONSE OF POSTAL SERVICE WITNESS NIETO TO INTERROGATORIES
OF FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

Response to FGFSA/USPS-T2-12
Attachment 1

TRACS Historical Highway Capacity Utilization Factors FY90-FY94

	FY 1990	FY 1991				FY 1992				FY 1993				FY 1994			
	PQ1*	PQ1	PQ2	PQ3	PQ4	PQ1	PQ2	PQ3	PQ4	PQ1	PQ2	PQ3	PQ4	PQ1	PQ2	PQ3	PQ4
Intra-SCF	49.7%	42.7%	40.9%	42.7%	39.5%	43.6%	41.7%	38.3%	39.6%	42.1%	38.4%	38.3%	38.0%	43.4%	38.4%	38.0%	39.3%
Test Conducted At:																	
Inbound SCF	38.5%	47.8%	45.8%	45.3%	43.8%	50.7%	40.8%	40.3%	39.7%	48.5%	46.0%	42.1%	40.5%	40.3%	42.4%	45.1%	44.3%
Inbound Other	39.7%	36.0%	35.9%	58.3%	45.1%	38.6%	40.1%	32.8%	47.8%	27.3%	28.4%	29.3%	42.4%	41.7%	40.6%	39.7%	34.8%
Outbound SCF	56.0%	56.5%	49.3%	46.7%	49.1%	52.3%	52.3%	49.9%	42.3%	55.9%	42.6%	53.1%	42.7%	59.5%	49.8%	46.7%	42.9%
Outbound Other (a.m.)	64.8%	42.8%	39.4%	40.4%	34.5%	44.8%	41.0%	37.3%	40.3%	42.4%	39.3%	36.2%	33.6%	49.7%	36.6%	36.0%	40.2%
Outbound Other (p.m.)		30.3%	33.9%	22.7%	24.8%	31.8%	34.2%	31.3%	29.1%	36.5%	35.7%	30.9%	30.9%	25.6%	22.4%	22.6%	34.6%
Inter-SCF	55.9%	54.6%	47.0%	53.6%	52.1%	47.8%	50.7%	45.7%	47.1%	46.6%	48.7%	50.7%	56.2%	45.7%	46.4%	50.2%	44.4%
Test Conducted At:																	
BMC	64.8%	67.4%	47.5%	60.6%	68.8%	48.8%	53.2%	45.3%	49.8%	55.5%	46.7%	44.9%	72.6%	38.3%	42.3%	60.3%	48.4%
SCF	57.0%	55.7%	52.6%	50.5%	49.9%	52.6%	51.0%	49.0%	47.4%	48.1%	50.0%	53.6%	50.0%	55.6%	50.9%	49.7%	48.0%
Other	45.9%	40.6%	40.8%	49.6%	37.7%	41.9%	48.0%	42.8%	44.2%	36.3%	49.5%	53.7%	46.0%	45.1%	46.0%	37.8%	36.8%
Intra-BMC	55.2%	60.5%	57.1%	51.8%	54.0%	57.5%	56.2%	56.5%	55.1%	56.7%	64.4%	58.4%	53.9%	55.6%	55.0%	57.3%	62.6%
Test Conducted At:																	
BMC	43.7%	43.5%	44.1%	37.9%	38.0%	43.1%	42.5%	40.7%	39.5%	42.4%	40.3%	40.4%	41.9%	43.0%	42.0%	40.8%	42.5%
Inbound SCF	60.3%	56.7%	68.6%	55.7%	59.0%	61.1%	63.1%	60.8%	59.4%	55.8%	66.4%	61.8%	53.9%	61.6%	57.9%	53.8%	70.2%
Inbound Other	50.9%	58.3%	41.1%	48.7%	51.4%	63.5%	52.3%	50.8%	58.3%	61.7%	80.1%	60.0%	58.7%	49.3%	42.3%	55.7%	68.0%
Outbound SCF	72.5%	74.1%	73.6%	65.8%	76.4%	79.2%	72.5%	70.4%	72.2%	79.1%	76.9%	80.9%	70.0%	67.7%	71.7%	76.6%	68.0%
Outbound Other	48.6%	69.8%	58.2%	50.9%	45.4%	40.8%	50.5%	59.9%	46.3%	44.4%	58.3%	49.1%	45.2%	56.6%	61.0%	59.3%	64.5%
Inter-BMC	75.5%	78.6%	62.7%	71.4%	66.2%	72.0%	74.9%	71.2%	66.5%	69.0%	71.7%	76.5%	74.6%	66.6%	76.5%	68.2%	68.7%
Test Conducted At:																	
BMC	72.7%	72.7%	68.8%	66.3%	69.3%	69.9%	69.0%	63.7%	62.7%	69.1%	64.2%	71.3%	66.6%	66.8%	69.4%	68.9%	62.7%
SCF	68.9%	74.2%	69.3%	73.0%	65.4%	67.7%	71.7%	71.4%	66.0%	69.8%	72.2%	73.8%	74.1%	59.7%	72.3%	69.9%	72.8%
Other	84.9%	89.4%	50.0%	75.0%	53.7%	78.4%	83.9%	78.4%	70.8%	68.0%	78.6%	84.4%	83.8%	73.5%	87.9%	65.9%	70.6%

* Only PQ1 available for FY90.

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RESPONSE OF POSTAL SERVICE WITNESS NIETO TO INTERROGATORIES OF FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

b. Highway capacity utilization factors for FY96 can be seen in the table below:

Highway Capacity Utilization Factors
FY96

	FY 1996			
	PQ 1	PQ 2	PQ 3	PQ 4
Intra-SCF	*43.1%*	*44.1%*	*41.7%*	*35.1%*
Test Conducted At:				
Inbound SCF	33.3%	41.5%	35.1%	29.3%
Inbound Other	56.3%	51.4%	43.5%	28.6%
Outbound SCF	51.6%	56.4%	50.6%	52.1%
Outbound Other (a.m.)	47.1%	48.3%	43.9%	42.5%
Outbound Other (p.m.)	27.1%	22.9%	35.3%	22.9%
Inter-SCF	*54.7%*	*44.7%*	*40.9%*	*38.3%*
Test Conducted At:				
BMC	63.5%	38.1%	28.2%	23.2%
SCF	53.1%	53.1%	50.3%	49.3%
Other	47.5%	42.9%	44.2%	42.5%
Intra-BMC	*53.8%*	*58.8%*	*54.0%*	*48.1%*
Test Conducted At:				
BMC	44.8%	40.5%	38.0%	41.3%
Inbound SCF	57.1%	61.2%	60.0%	56.9%
Inbound Other	37.5%	58.9%	42.8%	29.5%
Outbound SCF	73.8%	75.2%	72.2%	66.2%
Outbound Other	55.6%	58.2%	56.7%	46.6%
Inter-BMC	*70.1%*	*67.3%*	*63.6%*	*57.5%*
Test Conducted At:				
BMC	69.1%	71.0%	63.2%	61.1%
SCF	69.3%	67.4%	64.0%	61.3%
Other	71.8%	63.3%	63.4%	50.0%

c. Objection filed September 15, 1997.

1990-91

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RESPONSE OF POSTAL SERVICE WITNESS NIETO TO INTERROGATORIES OF FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION

Highway Capacity Utilization Factors

FY95

	FY 1995			
	PQ1	PQ2	PQ3	PQ4
Intra-SCF	*39.4%*	*39.3%*	*39.7%*	*35.4%*
Test Conducted At:				
Inbound SCF	43.5%	37.7%	37.1%	33.4%
Inbound Other	29.2%	31.6%	32.3%	27.3%
Outbound SCF	48.8%	47.2%	52.9%	45.8%
Outbound Other (a.m.)	50.2%	52.7%	47.6%	45.8%
Outbound Other (p.m.)	25.4%	27.5%	28.4%	24.8%
Inter-SCF	*49.6%*	*43.4%*	*45.3%*	*40.3%*
Test Conducted At:				
BMC	49.5%	40.6%	41.9%	32.5%
SCF	53.3%	49.7%	51.3%	49.0%
Other	46.0%	40.1%	42.5%	39.4%
Intra-BMC	*57.7%*	*59.7%*	*60.2%*	*52.0%*
Test Conducted At:				
BMC	42.0%	42.1%	40.2%	37.7%
Inbound SCF	64.2%	54.8%	61.4%	48.6%
Inbound Other	50.9%	66.3%	57.1%	47.8%
Outbound SCF	74.9%	72.1%	74.7%	67.2%
Outbound Other	56.3%	63.1%	67.5%	58.5%
Inter-BMC	*64.1%*	*73.0%*	*66.3%*	*69.9%*
Test Conducted At:				
BMC	68.9%	68.7%	65.5%	64.2%
SCF	67.5%	69.0%	59.9%	68.5%
Other	56.0%	81.4%	73.6%	77.2%

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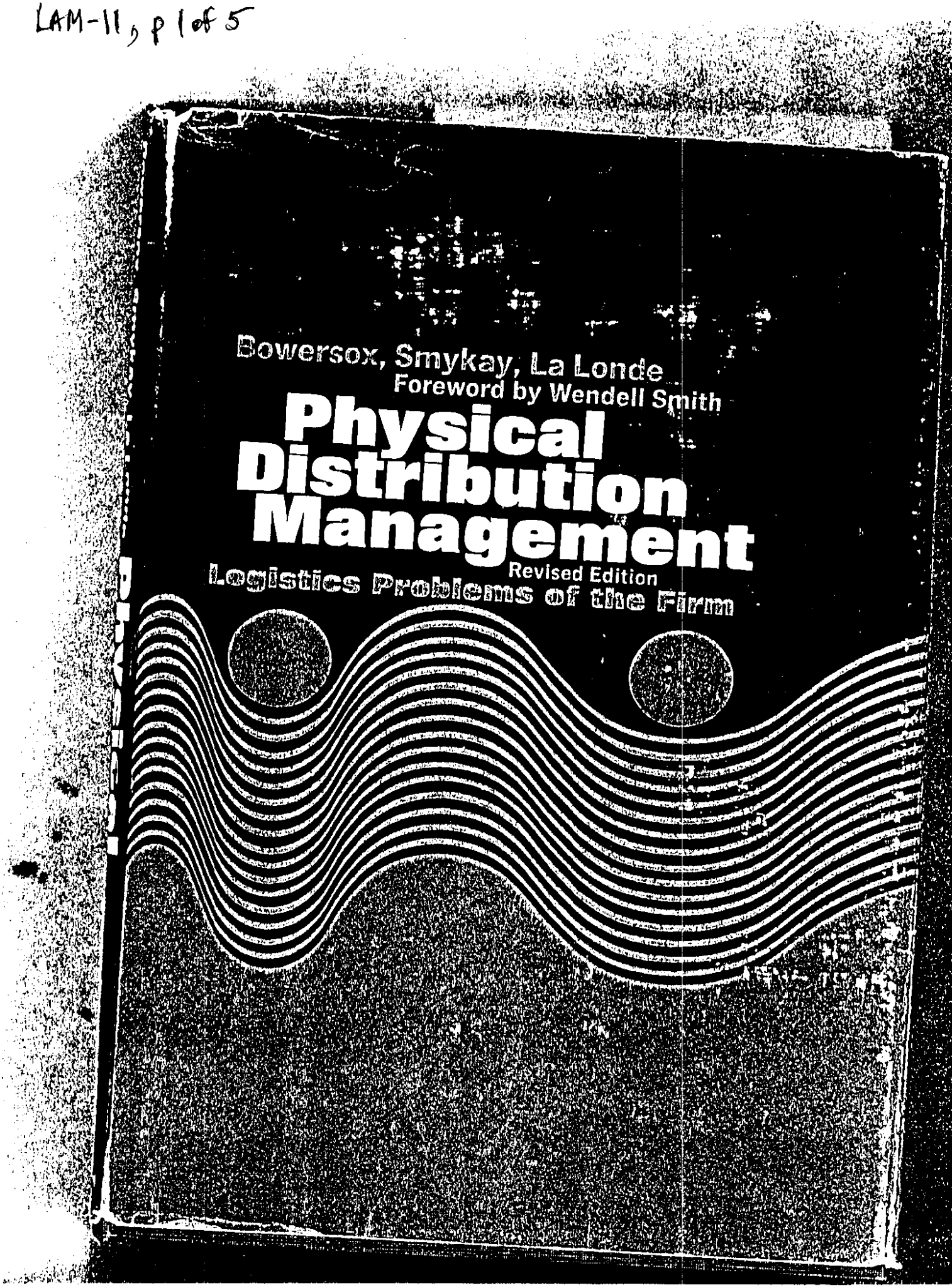
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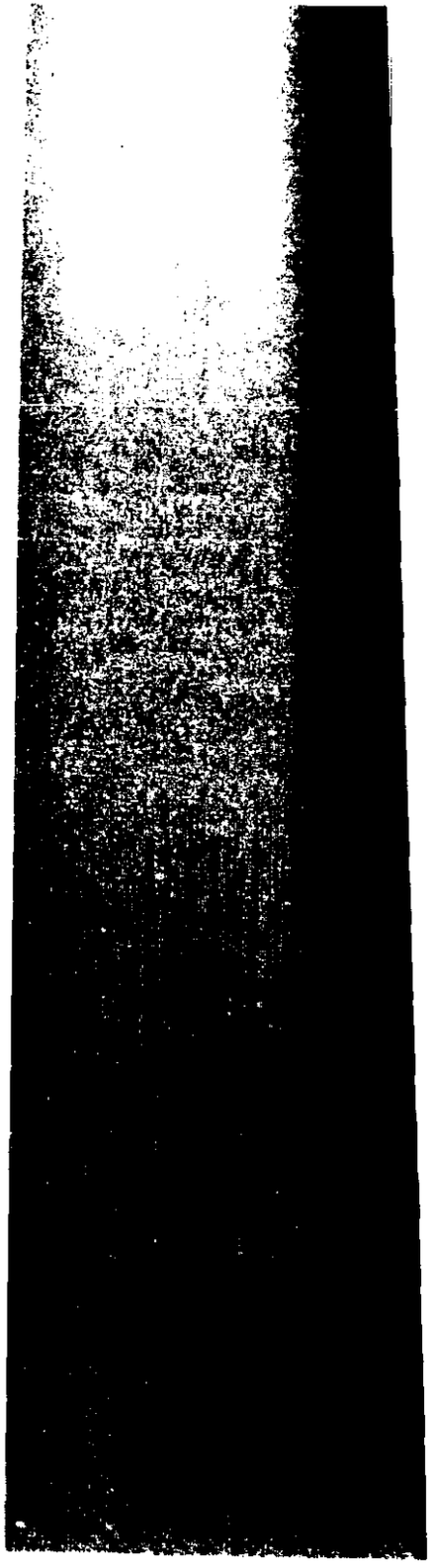

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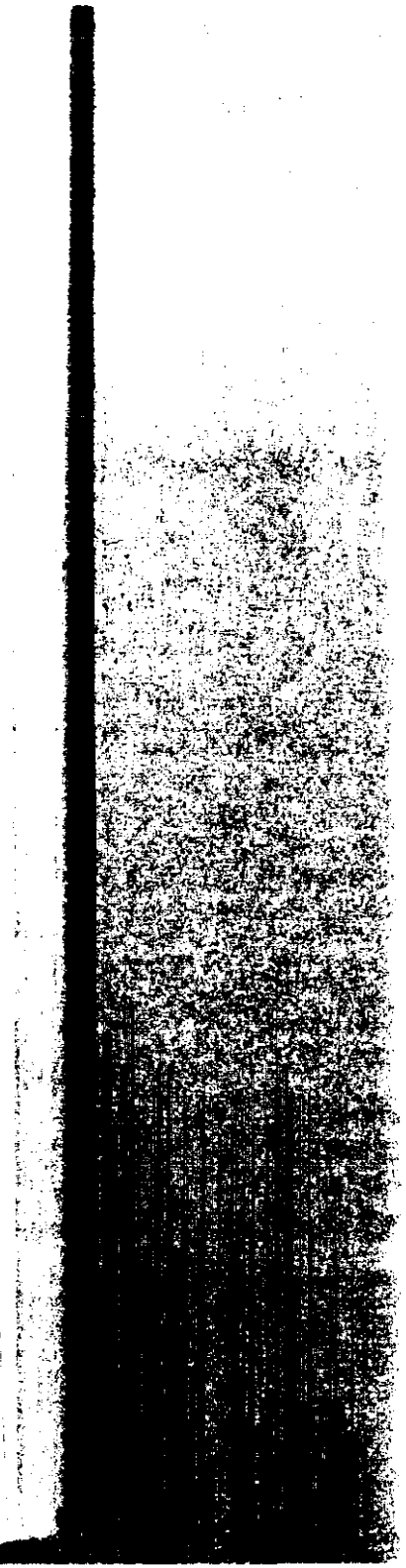

or by multiplying the cost per cwt mile by the given distance. For example, the cost per cwt for a distance of 125 miles (exactly one-half the average length of haul from study results) is $.175, exactly one-half the key cost. Of course, this applies only to the given load factor of 231 cwt.

Cost Recovery Factor. It was stated earlier that the carrier must attempt to recover at least his out-of-pocket costs to assure a sound pricing structure. From Table 7–1, the necessary recovery factor for line-haul costs is $.0014 per cwt mile. It then follows that at the average length of haul of 250 miles, the required revenue to cover the cost is $80.85 (250 miles × 231 cwt × $.0014 /cwt mile). If the carrier sets his key price equal to his key cost, his revenue generation is $80.85 ($.35 /cwt × 231 cwt).

For a haul of 125 miles (exactly one-half of the average length of haul), the cost recovery factor is $40.42, which is exactly the result of multiplying $.0014/cwt mile by 125 miles by 231 cwt.

Cost Variations by Weight. Thus far, it has been shown that the line-haul costs, by ICC formulas, are strictly linear with distance, and that a cost per cwt scale can be constructed to recover out-of-pocket line-haul costs for any distance if the load factor is held constant.

By the same token, changes in load factor will affect cost scales. Recalling that the purpose of a cost scale is to recover the total line-haul cost for any distance, doubling the load factor to 462(2 × 231 cwt) will result in a cost per cwt mile of exactly one-half the key cost or $.0007 /cwt mile. Multiplying the new load factor times the new cost and key distance (250 miles) results in a revenue recovery factor of $80.85, initially the same as the revenue recovery resulting from the application of the key cost to its average load factor and average length of haul.

It is now possible to construct the line-haul out-of-pocket cost for any distance and any weight. The simplest way to understand the basic economics involved is to consider it to be similar to ordinary factory accounting. The cost that must be charged to cover a lathe operation is determined by dividing the lathe costs by the output. Similarly, the line-haul costs are analogous to a truck trailer, and its unit cost depends upon how far it travels and the amount of weight it carries. A table developed for various load factors is shown in Table 7–2.

Note that Table 7–2 refers to round-trip load factor. This is an example of one of the joint cost allocation problems in transportation. Because a truck usually goes from an origin to a destination and back, line-haul costs are generated in both directions. The usual way of allocating these costs is to calculate a round-trip load factor. Thus, if 30,000 pounds are shipped in one direction, and 10,000 in the other, the round-trip load factor is 20,000 (40,000 ÷ 2). The approximate line-haul cost per cwt is then found under the 20,000-pound load factor (or 200 cwt), and in Table 7–2 is $.1575 per cwt mile.

TABLE 7–2* OUT-O ROUND-TRIP LOAD

Average Round-trip Load (pounds)	C
10,000	
11,000	
12,000	
13,000	
14,000	
15,000	
16,000	
17,000	
18,000	
19,000	
20,000	
21,000	
22,000	
23,000	
24,000	
25,000	

One-way costs are the same same. When the loads in each plus the inbound load must be

For example, if the outbou the average round-trip load is is $.1575. For 300-mile actual (300 miles × $.1575 /cwt. mile

*SOURCE: Previous data w *of Transporting Freight by Cla modities — Middlewest Region* April, 1967.

Pickup and Delivery Co costs have service units as (fuel). These costs are first of cwt delivered in that s from shipment records. Di total cwt gives a cost per

It is now necessary to kn in a specific shipment to For example, if the shipme are $44.20 ($.17/cwt × 26 the $.17/cwt for pickup a 240 cwt picked up and deli

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TABLE 7-2* OUT-OF-POCKET LINE-HAUL COSTS FOR VARIOUS ROUND-TRIP LOADS (Based upon a cost of $.31499/vehicle mile)

Average Round-trip Load (pounds)	Cost in Cents per cwt mile	Average Round-trip Load (pounds)	Cost in Cents per cwt mile
10,000	$.3150	26,000	$.1212
11,000	.2864	27,000	.1167
12,000	.2625	28,000	.1125
13,000	.2423	29,000	.1086
14,000	.2250	30,000	.1050
15,000	.2100	31,000	.1016
16,000	.1969	32,000	.0984
17,000	.1853	33,000	.0955
18,000	.1750	34,000	.0926
19,000	.1658	35,000	.0900
20,000	.1575	36,000	.0875
21,000	.1500	37,000	.0851
22,000	.1432	38,000	.0829
23,000	.1370	39,000	.0808
24,000	.1312	40,000	.0787
25,000	.1260	41,000	.0768

One-way costs are the same as round-trip costs when the load in each direction is the same. When the loads in each direction are different, the average of the outbound load plus the inbound load must be computed to select the proper cost.

For example, if the outbound load is 30,000 pounds and the inbound load is 10,000, the average round-trip load is 20,000 pounds. The out-of-pocket line-haul cost per cwt. mile is $.1575. For 300-mile actual haul, the out-of-pocket line-haul cost is $.473/100 pounds (300 miles × $.1575 cwt. mile).

*SOURCE: Previous data were based upon approximations. Data here are from *Cost of Transporting Freight by Class I and Class II Motor Common Carriers of General Commodities — Middlewest Region*, 1965, ICC Statement No. 4-67, Washington, D. C., April, 1967.

Pickup and Delivery Costs. As with line-haul costs, pickup and delivery costs have service units associated with time (drivers' wages) and distance (fuel). These costs are first collected from the books of account. The amount of cwt delivered in that specific pickup and delivery area is then collected from shipment records. Dividing the total pickup and delivery costs by the total cwt gives a cost per cwt. This cost was determined to be $.17/cwt.

It is now necessary to know only the number of cwt picked up and delivered in a specific shipment to calculate its share of pickup and delivery cost. For example, if the shipment weight is 260 cwt, the pickup and delivery costs are $44.20 ($.17 cwt × 260 cwt). In fact, Table 7-3, column 3, shows that the $.17/cwt for pickup and delivery cost is based upon an average of 240 cwt picked up and delivered.

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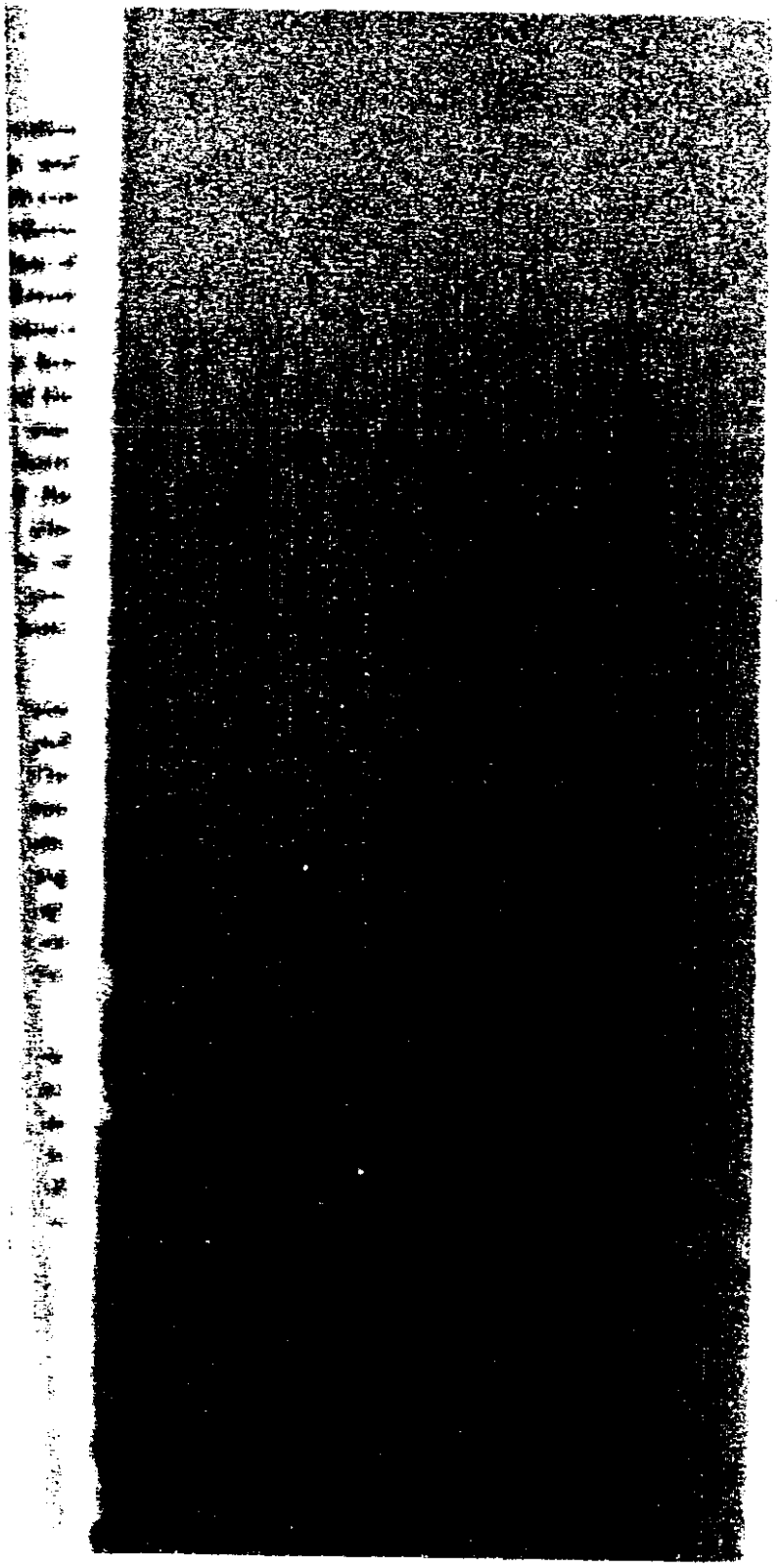
THE URBAN TRANSPORTATION PROBLEM | J. R. Meyer, J. F. Kain, M. Wohl

Harvard University Press, Cambridge, Massachusetts

1965



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Preface

Urban transportation, for a complex set of reasons, has beco
concern of American life and public policy in the mid-twenti
It is perhaps an example *par excellence* of the type of pro
priority by a society which has solved many of its more basi
problems, such as achieving a high general standard of living a
ing its more obvious or pressing problems of unemployment a
Whatever the cause, it has become increasingly fashionable
United States to say that "an urban transportation problem"
to explore a variety of ways, some quite exotic, to alleviate
this "problem." It is the purpose of this study, by integratin
verse but relevant pieces of information, to help focus and ex
cogent discussions of urban transportation alternatives. In br
text, an integrated set of data is presented on the forces tha
demand for and supply of urban transportation services in o
vide a more rational context for decision-making on these pro
underlying premises are that it should be possible to identify,
able agreement, basic economic and technological forces that
our urban areas and that if this is accomplished it will then be
focus discussion on appropriate goals or criteria in setting urb
tation policies. Debate on appropriate goals or criteria in a
reasonable agreement about basic economic and technolo
should improve decision-making in this area significantly.

This book is one report of many developed as part o
Corporation study of urban transportation problems which
the summer of 1960. It should be immediately emphasiz
particular study is heavily indebted to the other RAND urban
tion reports for much of its evidence, data, and analyses. Cit
contributions of these different reports are to be found through

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p. 3 of 5.

the *relative* demand pattern for downtown-oriented travel by different modes might be hypothesized to remain the same as that during the peak hours, providing that equivalent service and relative cost structures were retained for basic systems.[2] For reasons explained and documented in previous chapters, however, it is clear that the off-peak utilization of different modes is not equivalent, in large part because origination-destination and trip purpose patterns are different during off-peak hours and because the avoidance of discomfort, inconvenience, and other travel conditions seem to be more important to off-peak than peak travelers. (See Figures 1 through 5 and Table 30.) Off-peak travel is relatively less by transit modes than by private automobile. The specific rank ordering seems to be that long-distance rail commuting is most highly concentrated during the rush hours, rail rapid transit is second, and bus transit third, while automobile travel is the least rush-hour-oriented of all the major modes. Therefore, the net result of placing the cost analyses on a twenty-four-hour rather than a four-hour basis would certainly be to reduce the costs of automobile travel most and rail modes least.

Equally important in determining the relevant time period for a cost analysis is the matter of for whom are the system costs incurred, and therefore to whom should they be charged. If the basis of design and justification of downtown-oriented systems is the rush-hour flow, as it usually seems to be, then it can be argued that the full costs of providing the capacity needed for that service should be charged to rush-hour travelers. In particular, if the rush-hour downtown movement were not of high volume and highly peaked, it is doubtful whether the construction of expensive, high-capacity, and inflexible (in the sense of not serving all types of regional trips) rail or other specialized transit systems ever would be considered. Consequently, the costs of constructing facilities to meet highly peaked, downtown movements probably should be charged largely to rush-hour passengers. (This point is more fully elaborated in chapter 13.) Under these circumstances, the result is that little net effect will be made on rush-hour costs,[3] relative or absolute, by the inclusion of off-peak travel.

Different route lengths were specified for costing in order to provide data for different sizes of communities (in terms of geographical distribution and density) and to categorize in quantitative form any changes in the relative positions of alternative technological systems which might occur because different route lengths were

[2] This is a very tricky assumption, of course, and one hard to validate without actually examining detailed cost structures. The additional transit expenditures—both capital and operating—should be small compared to the peak-hour costs, and the same would hold true for automobile travel. For automobiles, additional parking, ownership, and accident costs would be small because of joint use and cost sharing (that is, high turnover in parking garages, use of automobiles for vacation trips, and so forth); further economies would result because of higher car occupancy during off-peak hours.

[3] In this connection, it is vital to distinguish between cost and price.

TABLE 59

LINE-HAUL FACILITY F

Type of facility and locatio
Rail transit lines
Chicago, Congress St.
Chicago, Congress St.–Milwaukee
Cleveland, Westside
Cleveland, Eastside
Boston, Highland Branch
Philadelphia, Market–Frankford
South Jersey (proposed)
Washington, D.C. (proposed in 1962)
N.W. Bethesda
Petworth–Columbia
Silver Spring–Rockville
Queens Chapel–Route 95
Anacostia–Henson Creek
Alexandria–Springfield
Rosslyn–Route 66
Express bus lines on mixed traffic expressw
Washington, D.C. (proposed in 1962)
GWMP (Maryland)
Route 95
Suitland Parkway
Henson Creek
Bolling
Shirley Highway
Dulles Airport
Highway routes (average distance to outer l
Washington, D.C.
Baltimore
Boston
St. Louis
Philadelphia

lengths for highway and transit line-haul f
Figures 29, 30, and 31 provide inform
evaluating route lengths needed for urba
the basis of these present-day data, it appe
employed in the present cost-analyses—
most relevant cases,[4] both present and futu

[4] It should be noted that attention general
transit technologies and does not include co
muter railroad operations.

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Figures 42 through 46 display the results obtained in costing each of the five types of downtown distribution modes on the basis of the cost relationships reported in the previous section. The three surface systems—integrated bus, separate feeder bus, and integrated automobile—exhibit near-perfect divisibility for all downtown route lengths, and the two types of surface bus service (integrated bus and separate feeder bus) have unit costs which are identical for all practical purposes. By contrast, the rail and bus subway modes are both highly indivisible, thus produc-

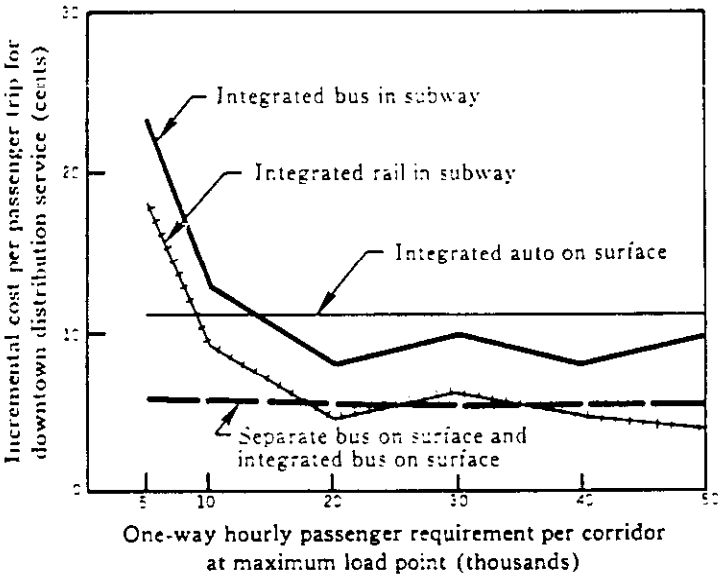

Figure 42. Comparative costs of downtown distribution modes. 1½-mile downtown route length.

ing high unit costs at the lowest volume levels, but a leveling-off in costs as volumes approach a 1-way hourly maximum load point volume of 20,000. It should be noted that some of the rail subway cost undulations indicated in Figures 42 through 45 undoubtedly result from the failure to reoptimize the over-all system operation, and some result from inherent indivisibilities. They can be ignored for most comparisons.

For all travel modes an almost linear relationship exists between unit costs and downtown route length—with cost increases being more or less directly proportional to route length increases for all modes except automobile on surface streets. (See Figure 46 in particular.) For automobile on surface streets, the increases are somewhat less than proportional,

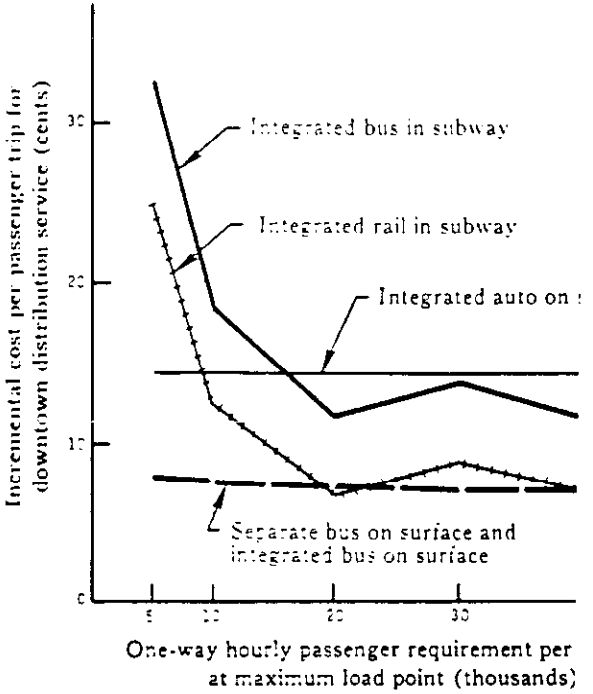

Figure 43. Comparative costs of downtown dist modes. 2-mile downtown route length.

since fixed parking costs are spread over longer trip dis length increases. These relationships seemingly hold for

A clear distinction can be made between the cost rela ble above and below 20,000 passengers per corridor pe dor volumes below 20,000 an hour, the surface bu cheapest in downtown operations, particularly when con bus or rail transit in subway on the longer downtown the two surface bus modes, the integrated bus service g the more desirable since passenger transfers would be a time would be involved, and no important cost differenti more, even at the lowest volume ranges, the integrated town service runs about 6 cents a trip higher than int 1½-mile downtown route, and about 8 cents a trip hi route; in relative terms, the integrated bus service is g per cent less costly than integrated automobile for dov surface streets.

Estimates of the travel times for the various modes ure 47. (Bus passenger trip times were assessed as on

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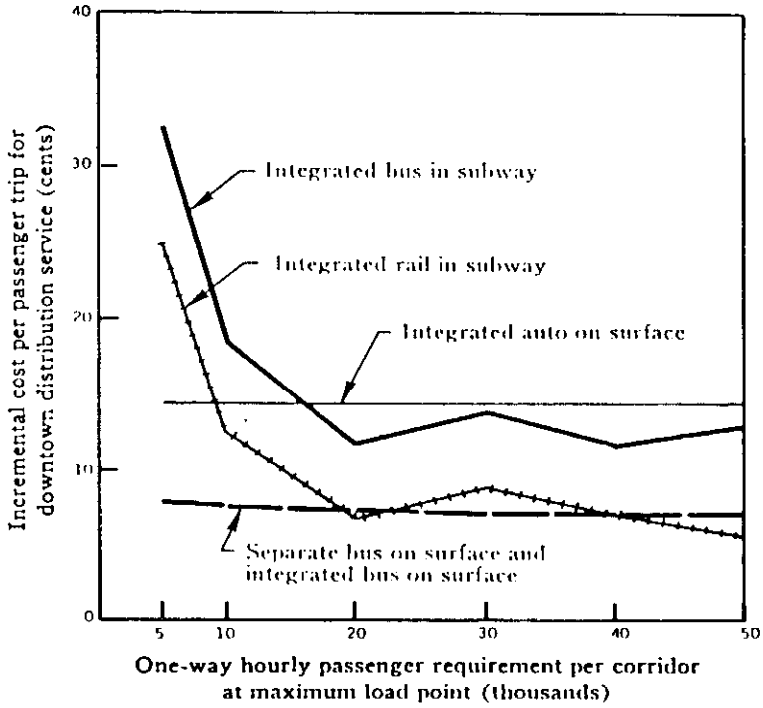

Figure 43. Comparative costs of downtown distribution modes, 2-mile downtown route length.

since fixed parking costs are spread over longer trip distances with route length increases. These relationships seemingly hold for all volume levels.

A clear distinction can be made between the cost relationships applicable above and below 20,000 passengers per corridor per hour. At corridor volumes below 20,000 an hour, the surface bus modes are the cheapest in downtown operations, particularly when compared with either bus or rail transit in subway on the longer downtown route lengths. Of the two surface bus modes, the integrated bus service generally would be the more desirable since passenger transfers would be avoided, less travel time would be involved, and no important cost differentials exist. Furthermore, even at the lowest volume ranges, the integrated automobile downtown service runs about 6 cents a trip higher than integrated bus for a 1½-mile downtown route, and about 8 cents a trip higher for a 4-mile route; in relative terms, the integrated bus service is generally 50 to 60 per cent less costly than integrated automobile for downtown service on surface streets.

Estimates of the travel times for the various modes are shown in Figure 47. (Bus passenger trip times were assessed as one-half of the one-

TRACS Estimate of Cubic Feet Fiscal Year 1996

PQ196 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types Intra-BMC

ACCOUNT= 53127 BOUND=.

MAILCODE	CuFt	Percent CuFt	
1st Class	88,278,818	8.37	
2nd Cl Period	124,891,547	11.84	
International	11,133,400	1.06	
PRI	67,564,941	6.40	
STD A	328,939,249	31.18	328,939,249
STD B - Other	147,624,723	13.99	
STD B - P	286,621,091	27.17	286,621,091

PQ296 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types Intra-BMC

ACCOUNT= 53127 BOUND=.

MAILCODE	CuFt	Percent CuFt	
1st Class	158,075,574	14.66	
2nd Cl Period	104,794,624	9.72	
International	7,226,067	0.67	
PRI	77,175,679	7.16	
STD A	287,632,518	26.68	287,632,518
STD B - Other	145,086,120	13.46	
STD B - P	298,053,459	27.65	298,053,459

PQ396 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types Intra-BMC

ACCOUNT= 53127 BOUND=.

MAILCODE	CuFt	Percent CuFt	
1st Class	200,185,973	16.22	
2nd Cl Period	127,996,043	10.37	
International	8,497,872	0.69	
PRI	61,323,674	4.97	
STD A	380,539,334	30.84	380,539,334
STD B - Other	150,069,556	12.16	

STD B - P	305,244,848		24.74	305,244,848

PQ496 Distribution Keys Using USPS Estimates (Weighted) for 7 Mail Types
Intra-BMC

ACCOUNT= 53127 BOUND=.

MAILCODE	CuFt		Percent CuFt	
1st Class	228,145,303		17.73	
2nd Cl Period	147,604,149		11.47	
International	4,714,949		0.37	
PRI	76,709,871		5.96	
STD A	329,741,850		25.62	329,741,850
STD B - Other	165,936,836		12.89	
STD B - P	334,141,580		25.96	334,141,580

Four Quarters

Standard(A)	1,326,852,951	
ratio		1.083976
Parcel Post	1,224,060,978	

Source: Running of Postal Service SAS Model in Lib. Ref. H-82 and H-84, y96a11.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all parties of record in this proceeding on this date in accordance with Section 12 of the Rules of Practice and Procedure.

Dated : January 26, 1998.

M. W. Wells, Jr., Attorney